# Westinghouse
# Hipersil® Core
# Design Engineer's Handbook

Price 1.50

## CONTENTS



April 15, 1965

# INTRODUCTION

Hipersil tape-wound cut and uncut cores were introduced by Westinghouse in 1942. Hipersil steel is a grain oriented magnetic iron silicon alloy of very high permeability and low core loss. By continuously winding the steel into cores, the direction of magnetic flux always coincides with the best magnetic direction of the Hipersil material.

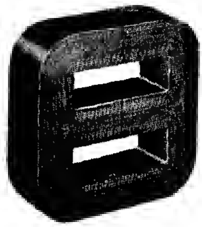
Through the years, Hipersil cores have become commonly used for many transformer and reactor components both commercial and military. Their use enables the designer to shrink the size of his component or obtain better performance characteristics.

## GENERAL DESCRIPTION

Hipersil cores are made either cut or uncut in ring or C-core form for single phase applications or E-core form for three phase applications.

single phase • type C

three phase • type E



ring type

Hipersil cores are prepared by slitting the steel to width; then winding it on a form of the desired shape. They are then carefully annealed in a special atmosphere under exacting conditions to relieve stresses set up in slitting and winding. The C and E cores are next bonded in a special resin to hold the layers together. Uncut cores may be supplied as annealed or may be bonded to make the core more rigid. Bonding the core increases the exciting watts and core losses somewhat. To take full advantage of the material uncut cores are often supplied less bonding. They may also be supplied with edge-bonding or with Polyclad, a hard resin coating which completely surrounds the core and provides insulation which can be used as a base for most windings. The C or E cores are carefully cut after bonding to keep the air gap small when the halves are placed together.

Hipersil cores are available in several lamination thicknesses. They cover a wide field of application from power distribution frequencies to very high frequencies used in electronic components.

Single-phase 12-mil Hipersil C cores are commonly used at power distribution frequencies to make use of the excellent high density permeability, and low loss for conventional continuous duty designs. They can also be used to further reduce size or increase output of intermittent duty transformers—for example, those used for resistance welding or x-ray applications.

Single-phase 4-mil Hipersil cores offer the advantage of lower loss at higher frequencies and are therefore primarily advantageous in aircraft or shipboard circuits operating at 320 to 5000 cycles. Reduction in thickness has been obtained without sacrifice of permeability or saturation level, so that reductions in weight and space or improvements in operating characteristics are possible over this frequency range.

Single-phase 1 and 2-mil Hipersil C cores have found their chief application in pulse transformers and similar duty components. Here the thinness of laminations together with high space factor, permits the design of small high frequency components without sacrifice of permeability or saturation density. The excellent magnetic and loss characteristics have also proven advantageous in the design of transformers and reactors for alternating voltage applications up to 500 kc or higher. All C cores are manufactured to specifications that meet the requirements set forth in EIA standard RS 217 for wound cut cores.

Three-phase Hipersil E cores offer a solution to the problem of a small, light-weight, three-phase transformer utilizing the high permeability and low loss characteristics of Hipersil cores. Consisting of two-piece construction and three winding legs of equal cross-section, they are made in 12, 4 and 2-mil gauges to cover a wide range of frequencies.

Ring type 12, 4, 2 and 1-mil Hipersil cores offer the advantages of high permeability and low hysteresis loss without impairment caused by a magnetic joint. They offer a solution to many magnetic amplifier, reactor or current transformer problems where material quality is of prime importance.

# GENERAL MAGNETIC DEFINITIONS

## Terminology

a. Unit Pole—a convenient concept defined so that two unit poles (m) of like kind placed one centimeter apart in vacuum will repel each other with a force of one dyne.

b. Magnetic Field Strength or Magnetizing Force (H) one centimeter away from a unit pole in vacuum is one Oersted. Gauss showed experimentally that the field drops off as the inverse square of the distance.

c. Intensity of Magnetization (I) is defined as the number of unit poles per unit area.

d. Faraday introduced the concept that some magnetic properties may be likened to an endless flow along lines of induction. These "lines" would be the paths described by mobile unit poles moving in a magnetic field.

It is customary to draw these lines so that in a field of one oersted one line will pass through a perpendicular unit area.

Gauss's theorem states that $4\pi$ lines emanate from a unit pole. The proof of this is rather simple. The field on the surface of a sphere formed by rotating a one centimeter radius about a unit pole is, by definition, one oersted. We have seen that one line passes through each square centimeter at this field strength. Therefore, $4\pi$ lines cut the sphere, since the surface area equals $4\pi r^2$.

e. Flux is the number of lines, or maxwells ($\phi$) crossing a given area perpendicular to the lines.

f. Magnetic Induction, or Flux Density is the flux per unit area. It is usually expressed in gauss. ($B=\phi/A$).

g. Thus far, consideration has been given to the behavior of magnetic forces acting within a vacuum. A demagnetized iron bar may be considered as containing a large number of free north- and south-seeking poles, so arranged that they neutralize one another. If this bar is placed in a longitudinal field, unit north and south poles will move to opposite ends of the bar.

The applied field will pass easily between these infinitesimal poles and will remain unchanged. Each unit pole has, as previously discussed, $4\pi$ lines radiating from it. Hence the total flux in the bar will be the vectorial sum of the applied and induced fields, or $B=H+4\pi I$ where $I=m/A$. The term $4\pi I$ is referred to as the intrinsic induction.

If the poles are considered to have a random distribution over the area A, one may write $B=\mu H$, where $\mu$ is a proportionality factor called the permeability.

h. Magnetomotive Force (mmf) is analogous to voltage and may be expressed (in gilberts) as:

$$\text{mmf}=\frac{4\pi Ni}{10}$$

where Ni represent the ampere-turns in a coil generating this mmf.

i. Flux may be likened to electrical current and mmf to voltage. It is natural, therefore, to reason that a parallel to Ohm's law may exist in magnetic circuits. If $\frac{\text{mmf}}{\phi}=R$, R will be found experimentally to equal $\frac{\ell}{\mu A}$.

The permeability, $\mu$, corresponds to electrical conductivity. R, comparable to resistance, is called the reluctance.

## Classification of Materials, Magnetically

Materials may be classified into various groups, depending upon their behavior in a magnetic field.

a. Diamagnetic materials are those having permeabilities less than unity. They are repelled from the poles of a magnet. Examples are the halogens, the rare gases, and the noble metals.

b. Paramagnetic materials are weakly attracted by a magnet. Their permeabilities range from 1 to about 1.1. Examples are: the alkali metals, the rare earths, and oxygen.

c. Ferromagnetic materials have permeabilities ranging into the thousands. They include the alloys of iron, nickel, cobalt, and gadolinium. Their important attributes are:

1. Permeabilities much greater than one.
2. Dependence of permeability on field and previous history (hysteresis).
3. Approach of the intrinsic magnetization to a finite limit as the field is increased (saturation).
4. Spontaneous magnetization (presence of small, intensely magnetized regions).
5. Curie point (disappearance of the above characteristics when the temperature exceeds a critical value).

## Magnetization Curve and Hysteresis Loop

If a piece of unmagnetized iron is subjected to a magnetic field, the magnetization induced in the iron may be described by a curve obtained by plotting magnetic induction B against field strength H. (figure 1.)

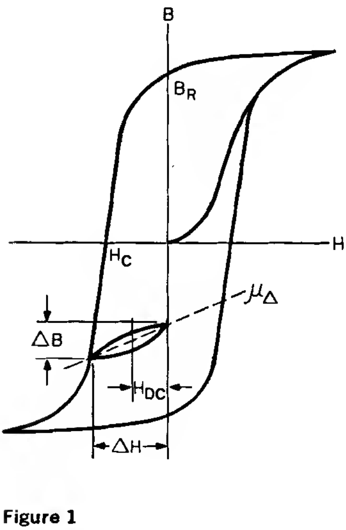



Figure 1

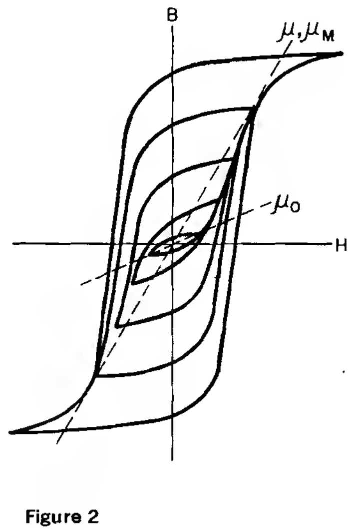



Figure 2

If the field is now decreased to zero and reversed cyclically, it is observed that the original curve is not retraced; the induction lags the field and forms a characteristic curve, called a hysteresis loop. If this alternating field is now reduced stepwise, a family of loops is obtained. (figure 2.)

The value of H for which B is zero is called the coercive force $H_c$. The value of induction for which H=0 is the residual induction $B_r$; and these values vary as the applied field is varied. When the field is sufficient to drive the iron close to saturation, these points become the coercivity and retentivity.

Saturation induction, $B_s$, is the ceiling value of B—H (or $4\pi I$).

## Permeability

As previously stated, the ratio B/H is called the permeability. The numerical value of this ratio will vary widely, depending upon the fields applied and the previous magnetic history. Refer to figures 1 and 2.

a. Normal Permeability, $\mu$, is the slope of a line drawn through the tips of a hysteresis loop formed at a specified value of H (or B). It is the ratio of the normal induction to the corresponding magnetizing force.

b. Initial Permeability, $\mu_o$ is the limit approached by the normal permeability as B and H decrease toward zero. It is customarily measured at 40 gauss.

c. Maximum Permeability, $\mu_m$ is the largest value of normal permeability attained by varying H.

d. Differential Permeability, $\mu_d$, is simply dB/dH at a specified point. It is the absolute value of the slope of the hysteresis loop at any point.

e. Incremental Permeability, $\mu\Delta$, is the permeability measured with superposed fields. It is of great interest in the design of reactors carrying direct current.

## Magnetization Process

a. Ferromagnetic material has long been regarded as an assemblage of tiny permanent magnets. The nature of this tiny magnet has been the subject of much consideration and conjecture. Modern theory calls it a domain—a group of atoms acting in unison. This domain is said to be spontaneously magnetized—that is, a magnetic moment is associated with it.

In a demagnetized iron bar, the domains are so arranged that their fields cancel. If an external field is applied to the bar, the domains will rearrange themselves so that a net field is produced.

b. The magnetic moment of a given domain is governed by the magnitude and direction of its magnetization, and by its volume. Changes in magnitude depend upon temperature, and—to a slight degree—upon the applied field. Ordinarily, therefore, the moment is changed by (1) an alteration in the direction of magnetization (rotation); and (2) by a change in the volume of the domain (moving boundary).

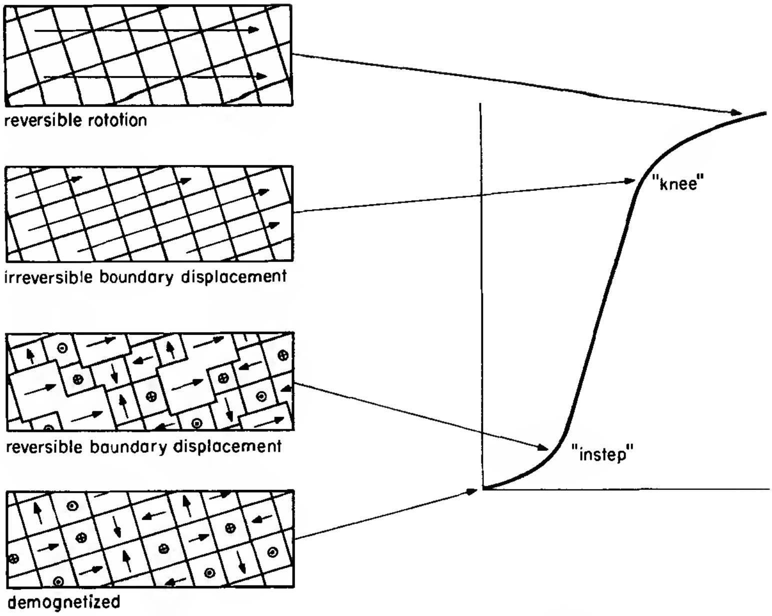



Figure 3

Figure 3 illustrates a highly idealized representation of possible domain orientation within an iron crystal. As an external field is applied gradually, the domains oriented in line with the field will grow at the expense to those opposed or perpendicular to it. This process is essentially reversible and corresponds to the "foot" of the magnetization curve.

As the applied field is increased still further, irreversible boundary displacement sets in, as the unfavorable domains are assimilated. The next figure illustrates the condition at the "knee" of the curve.

Still higher applied fields will effect reversible domain rotation. At this point the material becomes saturated. Stronger fields will produce no further change.

## Losses

a. It can be shown mathematically that all the energy expended in magnetizing a piece of iron will not be recovered by de-magnetizing it. Some will be lost as heat. This loss is independent of the rate of change of magnetization and is known as hysteresis loss. It may be expressed as

$$W_h = \frac{\int H\,dB}{4\pi}$$

Typical values are in (ergs/cm$^2$—cycle)

| Material | Loss | Induction |
|---|---|---|
| Supermalloy | 4 | 5,000 |
| 3% Silicon Steel | 300 | 10,000 |
| Alnico V | $2.5 \times 10^6$ | 14,000 |

Steinmetz developed the empirical expression $W_h = \eta B^{1.6}$, which holds rather accurately for iron through the range of 5 to 15 kilogauss.

b. If a conductive specimen is subjected to an alternating magnetic field, circulating Foucault or "eddy" currents will be set up. These currents act to oppose the applied field, and their net effect is to prevent the field from penetrating immediately to the interior of the material. The induction decreases, therefore, from the surface inward.

Eddy currents give rise to an energy loss equal to $\int \rho I^2$ over the volume of the material where $\rho$ is the resistivity and $I$ is the current density.

In sheets of thickness $\delta$ subject to a sinusoidal field parallel to the sheet the eddy loss is given by

$$W_e = \frac{\pi^2 \delta^2 B^2 f}{6\rho}$$

when flux penetration is essentially complete. $(2\pi\delta\sqrt{\mu f/\rho} < 1)$.

Other expressions have been developed for use if this is not the case.

## Magnetic Anisotropy

Crystals of the magnetic metals are anisotropic—that is, their properties vary with direction.

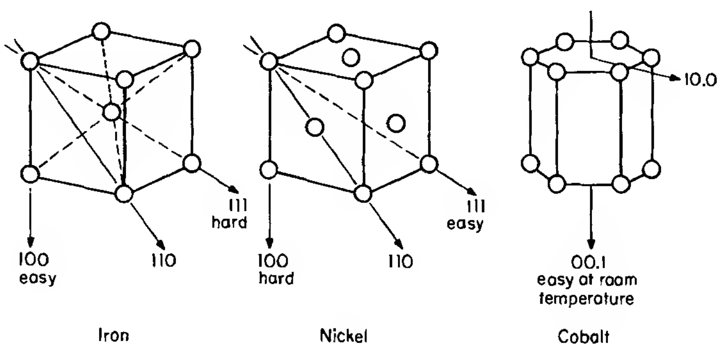



Figure 4

a. Iron is arranged in a body-centered cubic structure, as shown in figure 4. Experiments have indicated that magnetization proceeds most readily in a direction parallel to a cubic axis (100 direction), and least so parallel to the body diagonal (111). Magnetization along a face diagonal (110) is intermediate in responsiveness.

In many polycrystalline materials, the crystals are oriented more or less at random. The process of cold rolling metal sheets produces, however, some regularity in orientation; and the magnetic properties are markedly anisotropic.

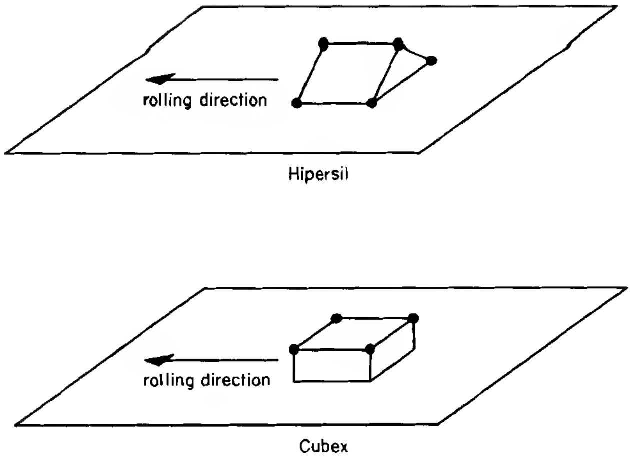



Figure 5

The crystalline structures of Hipersil and Cubex are shown in figure 5. They illustrate why Hipersil has a single preferred orientation; and Cubex, a double one.

b. Nickel is arranged in a face centered cubic lattice. Its directions of progressively harder magnetization are opposite those of iron.

c. Cobalt forms a hexagonal prismatic structure. At room temperature, the hexagonal axis is the direction of easy magnetization; but this becomes the most difficult direction avove 275°C.

## Effect of an Air Gap

Gapping a core is, in effect, adding reluctances in series—the reluctance of the air gap to that already existing for the core.

$$R_{total}=R_c+R_g=\frac{\ell_c}{\mu_c A_c}+\frac{\ell_g}{\mu_g A_g}$$

As a practical example, consider an uncut ring core 2″ ID x 4″ OD x 1″ thick. A reasonable value for $\mu$ in silicon steel is 10,000 at 10 kilogauss. The reluctance is $3\pi/10{,}000$ or .00094.

If a .005″ gap is now cut in the core, the reluctance will increase to

$$\frac{3\pi}{10{,}000}+\frac{.005}{1}=.00594$$

—over six times its uncut value. This illustrates the importance of minimizing the gap when a low core exciting volt-ampere value is essential.

The increase in reluctance will, however, cause the magnetization curve to "shear" as illustrated in figure 6, producing a sharp increase in $B_{max}-B_r$. It will be shown that this is very desirable in certain applications.

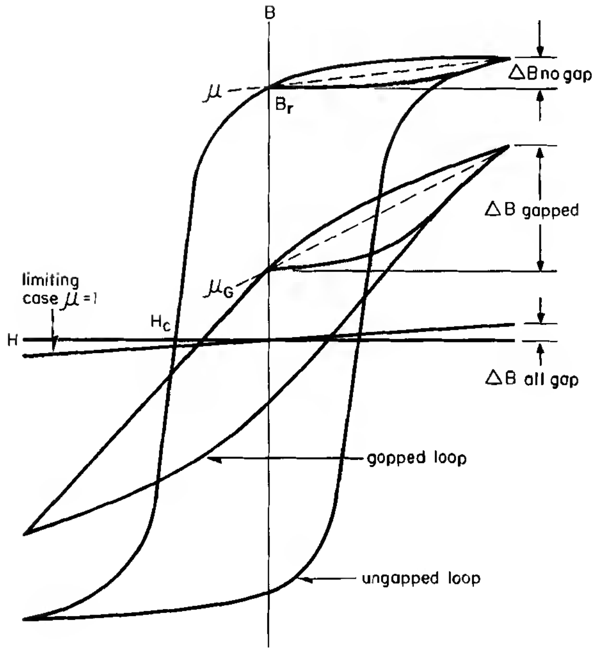



Figure 6

## Hysteresis Loop Under Special Conditions

a. Pulse. For the purpose of this discussion, we will consider "pulse" applications as those in which a core is driven by unidirectional current surges and is not biased or "reset". Under these conditions, the core will cycle over a minor hysteresis loop from $B_r$ to some higher value (figure 6).

In order to realize maximum flux swing and pulse permeability, it is often advantageous to introduce an air gap into the core; dropping $B_r$ to the lowest value commensurate with high $B_{max}$.

b. Switching. It was pointed out that low $B_r/B_{max}$ is desirable in pulse transformer cores. Another application—the use of magnetic cores as "memory" devices—calls for the highest possible ratio of $B_r/B_{max}$.

Such a core may be driven by positive or negative pulses. Assume that a core has been driven to saturation by a positive pulse. It will then rest at $+B_r$. Successive positive pulses will drive the core from $+B_r$ to $+B_{max}$ and back; and the output developed will be very low.

If a negative pulse is now applied, the core will "switch" from $+B_{max}$ to $-B_{max}$; generating a high amplitude pulse in an output winding. The output is, therefore, dependent upon the direction of the applied pulses and the core's history.

The core constitutes a bistable "memory" device, ideally suited to binary digital computer applications.

c. Magamp. If a core is driven by positive pulses and "reset" or biased by an adjustable direct current, its output may be varied by changing the direct—or control—current. Under these conditions it will cycle as shown in figure 7. Since a small variation in control current usually effects a large change in output voltage—or power—the device is frequently called a "magnetic amplifier".

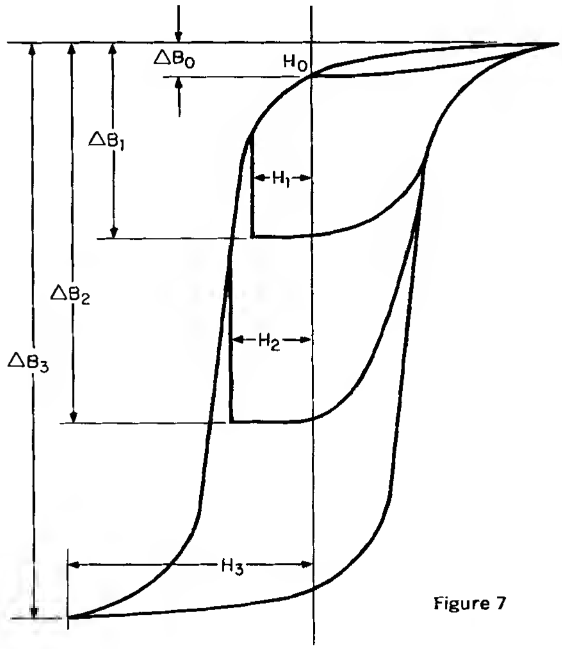



Figure 7

Desirable characteristics for such a core are:

1. High, narrow loop (high output with low control current).
2. Steep loop flanks (high gain).
3. High $B_r/B_{max}$ (minimum output with zero bias).

## Basic Equations

a. If a conductor cuts one line per second, an electromotive force of one emu or $10^{-8}$ volts is developed.

$$e=\frac{Nd\phi}{dt\,.\,10^8}=\frac{NAdB}{dt\,.\,10^8} \qquad (1)$$

Under step pulse conditions (1) becomes

$$e=\frac{6.45NA\Delta B}{10^8\,.\,t} \text{ or } \Delta B=\frac{et\ \ 10^8}{6.45NA} \qquad (2)$$

Where e=peak voltage; t=time in seconds; A=area in square inches; and ΔB=flux swing in gauss. Equation (2) is the basic formula in pulse transformer design.

Under sinusoidal conditions, (1) may be solved as

$$E=\frac{6.45.2\pi fNAB}{1.4 \times 10^8}=\frac{fNAB}{3.49 \times 10^8} \text{ or } B=\frac{3.49 \times 10^6 E}{fNA} \qquad (3)$$

Where E=RMS voltage and f=cycles per second. Equation (3) is used for calculating basic operating conditions in power transformers.

b. We have seen that mmf$=\frac{4\pi Ni}{10}$

Field strength may be expressed as mmf/unit length, or (4)

$$H=\frac{4\pi Ni}{10\ell}$$

Equation (4) is used to calculate bias for reactors and transformers carrying direct current.

c. Pulse permeability may be calculated from $=\frac{\mu\Delta B}{\Delta H}$ or

$$\mu=\frac{\Delta B}{\dfrac{4\pi Ni}{2.54 \times 10\ell}}=\frac{2.02\Delta B\ell}{Ni} \qquad (5)$$

Units are as above, except that $\ell$ has been converted to inches.

d. A circuit has one henry of inductance when $10^8$ lines link the circuit for each am pere flowing.

$$\frac{N\phi}{10^8}=Li$$

$$L=\frac{N\phi\,.\,10^{-8}}{i}=\frac{NBA\,.\,10^{-8}}{i}=\frac{\mu NAH\,.\,10^{-8}}{i}=\frac{4\pi\mu N^2A\,.\,10^{-9}}{\ell}$$

Converting to square inches and inches

$$L=\frac{3.2\mu N^2A\,.\,10^{-8}}{\ell}$$

If the core is cut or gapped

$$L=\frac{3.2N^2A\,.\,10^{-8}}{\dfrac{\ell c}{\ell_g+\dfrac{\ell c}{\mu_c}}} \qquad (6)$$

This equation is widely used in the design of iron core reactors.

# COMPONENT DESIGN

## A. General

For any size parts, the number of turns determines the flux density in the iron. The fewer the turns the higher the flux density, i.e. the "harder" the core material is "worked". The wire size determines the loss in the winding while carrying current. The smaller the wire the "harder" the wire is "worked". How hard to work the iron and the copper is determined by such factors as

a. Permissible temperature rise.

b. Maximum regulation permitted.

c. Specified limits, if any, on losses.

Temperature rise depends upon how hard the iron and copper are worked. It depends also upon configuration, type and size of case, potting material, encapsulation, etc. The temperature rise of the windings is usually of primary concern as it most directly affects the life of the insulation separating turns, section, and/or separate windings as well as the insulation to core, case, etc.

For some designs the iron (core) will cool the coil. In other cases the core may be hotter than the windings or be thermally blocked from dissipating heat so that heat dissipation will have to be from the winding itself. Thus the balance between how hard to work the core in relation to the winding depends also on configuration of core and coils, i.e. how the heat will be dissipated. While temperature rise often determines the size of the transformer, in some cases the voltage regulation (drop in output voltage from no load to full load) determines the size of parts. This latter is often true for the smaller ratings.

Since the area of the window is a measure of the amperes times turns, the product of the two areas is a measure of the kva rating at least for a reasonable range of ratings. It is assumed in this regard that the ratio of window to core cross section stays reasonably constant. The percent space used by insulation in the window will usually be less for a larger window since some of the insulation e.g. that from windings to case is a fixed thickness. On the other hand, as the windings get thicker, the heat has farther to travel to be dissipated, so that the hottest spot tends to increase in temperature as size increases. Putting in cooling ducts to reduce rise introduces factors that upset the size of parts required and hence affect the "relative power handling capacity" multiplier to be used to arrive at actual kva parts.

For C cores, the "relative power handling capacity" as given in the tables is the product of dimensions D, E, F, and G. For ring cores, it is the product of D, E, and $\frac{\pi F^2}{4}$. For E cores, it is the product of D, 2E, F and G.

## B. Type C Cores—Performance Characteristics and Tests

Curves give the necessary data for calculating transformer designs using Hipersil cores. The curves represent maximum values for finished type C cores. These cores are tested prior to shipment for core loss (true watts, TW) and exciting volt-amperes (apparent watts, AW). This exciting volt-ampere test limit includes the exciting volt amperes of the gap formed by the core butt joint.

## SINGLE PHASE—12 MIL

Twelve-mil Hipersil cores are available in a wide variety of sizes and shapes for use in transformers and reactors operating in the frequency range of 50 to 400 cycles per second. The induction of transformer designs can be as high as 16,500 to 17,000 gauss, at reasonable exciting currents, thereby permitting savings in size, weight, regulation or combinations of these. Losses are comparatively low even at these high inductions, thus permitting full utilization of the high induction without creating temperature problems.

## SINGLE PHASE—4 MIL

Loss becomes a predominant factor in core materials at frequencies higher than about 400 cycles per second.

Peak flux density could be lowered to keep losses at a reasonable value, loss being proportional to some power of B maximum. But this is a waste of material. Or, since losses increase with the thickness of material, they can be reduced by using thinner materials. However, the decreased material thickness must not be obtained at the expense of hysteresis losses or of d-c magnetic characteristics.

Four-mil thick Hipersil magnetic material in Westinghouse type C cores permits:

1. full advantage of decreased thickness in reduced losses.
2. reduced losses without sacrificing d-c magnetic characteristics.

Even in strips 0.004 inch thick, Hipersil maintains the grain-oriented characteristics so necessary to its excellent d-c magnetic properties and a grain structure which keeps hysteresis losses low.

Four-mil Hipersil in Westinghouse type C cores thus makes possible designs at high frequencies with (1) low losses, (2) low exciting current, with (3) no appreciable reduction in maximum flux density.

Its possibilities in high temperature, class H designs are outstanding, especially in the 320 to 1000 cycle range. The excellent magnetic properties of 4-mil Hipersil permit operation at flux densities as high as 17.6 kilogausses without excessive exciting current. Thus, full advantage can be taken of the ability to work at increased flux densities without the limitations of high losses and exciting currents imposed by poorer magnetic materials. Present type "C" cores can be safely used in designs having 200 C maximum temperature measured by rise in winding resistance.

The 4 mil, series Z, cores are made from very highly oriented silicon steel. Consequently, they will have lower excitation current requirements at high inductions (above 16,000 gauss). This property makes these cores particularly suitable for high temperature rise transformers and other applications where exciting current is the usual limiting design consideration. The core loss of 4-mil, series Z cores, is approximately the same as that of 4-mil, series H cores. Since the high degree of orientation provides a sharp knee to the magnetization curve, 4-mil, series Z cores also have a unique application to chokes and saturable reactors (magnetic amplifiers).

## SINGLE PHASE—1 AND 2 MIL

Type C cores in 1 and 2-mil Hipersil are used primarily in pulse transformers. Hipersil C cores, made from highly oriented material give excellent results in pulse transformers. These cores have excellent d-c characteristics.

The familiar, two-piece type C construction makes it a relatively simple job to assemble the core with a coil compared to the tedious process of stacking tiny thin-gauge laminations. Another advantage of the two-piece construction is that a gap can be introduced in the magnetic path to reduce the remanent flux density. The length of the inherent gap in these cores is the same as discussed for the other gauges.

The flux density in a pulse transformer core rises somewhat uniformly during the pulse to a final value at the end of the pulse defined by the equation:

$$B = \frac{E \times t \times 10^8}{N \times A \times 6.45} \text{ gauss}$$

where:

E=peak voltage
B=induction change in gauss (increment of average flux density above remanent value of B)
t=pulse length in seconds
N=number of primary turns
A=net area of the core in square inches

A large flux density change (B) during the pulse is necessary to good pulse transformer design. To accomplish this and still keep the number of turns and the area of the core small, the material used in the core should have low remanent magnetism and a high flux density saturating point. Because these features are inherent in Hipersil C cores, they are most desirable for pulse transformer work.

Pulse permeability is calculated from the formula

$$\mu = \frac{\Delta B \times L_c \times 2.54}{.4\pi N I_m} = \frac{2.02 \times \Delta B \times L_c}{N \times I_m}$$

where:

$\mu$ = effective pulse permeability
$I_m$ = peak exciting current in amperes
$L_c$ = mean length of core in inches =(2F+2G+2.9E)
$\Delta B$ = induction change in gauss
N = number of turns

Two mil cores in the normal range of sizes when tested with a pulse of 2 micro-seconds, 400 pulses per second, and an induction of 10,000 gauss have a minimum pulse permeability of 600.

All cores are tested by effective methods and quality control measures to insure magnetic quality for different types of application. These include a-c excitation, inductance, and pulse permeability.

For high power pulse transformer applications where higher interlaminar resistance and high pulse permeability are required, Westinghouse offers a superior grade of 2-mil C cores designated by the letter "B" with a minimum of 800 pulse permeability under the conditions set forth above. These cores have several times the interlaminar resistance of regular 2 mil material. They are quoted specially at the factory and are available in all standard sizes.

One mil cores are available in the same sizes and shapes as those shown for the 2-mil cores. They are used for the shorter pulse length applications. When tested with a pulse of 0.25 microsecond, 2500 gauss flux density, and 1000 pulses per second,

the minimum pulse permeability is 300 for normal core sizes. This value may be lower for unusually small or large cores, or if the strip width exceeds one inch.

**C CORE TEST GUARANTEES**

| Core | w/lb | VA/lb | watts | volt-amperes | kg | cps |
|---|---|---|---|---|---|---|
| A—12 mil | 0.9 | 1.70 | 0.9 x lbs | 1.70 x lbs+ *5.00 DE | 15 | 60 |
| H— 4 mil | 10.0 | 13.1 | 10 x lbs | 13.1 x lb +29.9 DE | 15 | 400 |
| Z— 4 mil | 15 | 39.5 | 16.9 x lbs | 45 x lbs+41.1 DE | 17.6 | 400 |
| L— 2 mil | 2 $\mu$ seconds 10 kg—min. perm—600 | | | | | |
| B— 2 mil | 2 $\mu$ seconds 10 kg—min. perm—800 | | | | | |

* 5.00 DE is for cores having a maximum allowable joint gap length of .001. For larger cores having a maximum allowable joint gap length of .002 use twice the value.

## C. Type E Cores—Performance Characteristics and Tests

### THREE PHASE—4 AND 12 MIL

Westinghouse has developed three phase Hipersil cores wound from the same highly grain oriented steels that are used in the manufacture of single phase "C" cores. Because of their configuration they are designated as "E" cores. They are available in 4 and 12-mil Hipersil.

The use of "E" cores results in a smaller and lighter weight three phase transformer than is obtained by the use of three single phase transformers. Although the nominal flux densities as used for single phase "C" cores apply, the losses will be somewhat greater because of third harmonics and certain unbalancing factors inherent in this type of construction. All "E" cores are tested to the following maximum limits:

| material | nominal flux density | watts total | exciting va |
|---|---|---|---|
| 12-mil TA | 15,000 gauss | 1.1 x lbs | ( 2.47 x lbs)+ 8.7▲A |
| 4-mil TH | 15,000 gauss | 12 x lbs | (17.8 x lbs)+51.7▲A |
| 4-mil TZ | 17,600 gauss | 18 x lbs | (68.4 x lbs)+71.0▲A |

A=D x 2E or gross area of leg cross-section in square inches.

▲ If 2E exceeds one inch, D2E exceeds 2¼ square inches, or F is 1⅝ or more, or G is 4³⁄₁₆ or more, use 17.4A for TA, 103.4A for TH, and 142.0A for TZ cores.

Note these values give the maximum total watts and va losses. Any unbalance in the volts per turn applied to one leg of a three-phase core affects the distribution of flux in the other legs and hence, the exciting va and/or watts. Even with exactly the same voltage per turn applied to each leg, there will be a variation in exciting current per leg. This is caused by variation in magnetic circuits including effective gaps at the joints. The maximum exciting va per leg will seldom be greater than one-third the total va multiplied by 1.2.

## D. Ring Type Cores—Performance Characteristics and Tests 12, 4, 2 and 1 Mil

Tape wound Hipersil ring cores are available in numerous sizes for saturable core reactor, current transformer and magnetic amplifier applications. Actual sizes vary in weight over a range of much less than a pound to several thousand pounds. The ring type gapless configuration is characterized by a high saturation density, very high permeability and low hysteresis loss.

Ring type cores will be supplied with any one of the following treatments:

untreated (U)—Magnetic values closely approximate the epstein values of the material.

edgebond (E)—Is a specific Westinghouse Research developed process offering greater mechanical rigidity with a minimum of deleterious effect on electrical quality (usually not over 5%).

polyclad (F)—Also a Westinghouse developed and patented process providing a covering on the core which permits winding the coil directly on the core without further insulation. Magnetically this process results in slightly higher losses than experienced with edgebonded cores (10%). This is a fluidized epoxy coating capable of 1000 volt insulation test.

resin impregnated (T)—A treatment which is rapidly being superseded by either edgebonded or polyclad because of the relatively large increase in exciting current and losses due to strain effects of the resin impregnation (20-50%).

Cores are tested to assure quality. When specific guarantees are required on ring type cores, refer to Westinghouse.

### CATALOG NUMBERING SYSTEM—RING CORES

Westinghouse Hipersil ring type cores are completely identified by catalog number. The following tabulation interprets this coding system for convenient ordering. For example, RH-210E covers a Hipersil ring type core using 4 mil series H material, 210 size, with edgebond treat.

| R | H | 210 | E |
|---|---|---|---|
| **designation** | **thickness of Hipersil material** | **core size number** | **type of treat or box** |
| R-ring type core | A-12-mil | identifies core size | U-untreated |
| | H-4-mil, 15 kilogauss test | | E-edgebond |
| | Z-4-mil, 17.6 kilogauss test | | F-polyclad |
| | L-2-mil | | T-resin impregnated |
| | M-1-mil | | |

Other uncut Hipersil cores can be furnished in round, oval, and rectangular shapes either untreated, edgebonded, or resin impregnated. For any special electrical or mechanical requirements, refer to Westinghouse.

# TRANSFORMER DESIGN METHODS AND FORMULAS

Basically, a transformer is designed to meet some temperature rise limit, some specified maximum regulation and some maximum permissible exciting current value most economically. Actually, however, further limitations as to size, weight, and efficiency may make the final design quite different than it might be if it merely had to meet the requirements of temperature regulation and exciting current. These considerations will determine to a large extent the value of induction B, at which it is desirable to operate the core, and the number of turns and wire size which will go into the coil. Assuming that a value of B has been assigned and that a number of turns, T, has been assumed (giving volts/turn, V/T):

$$A=\frac{3.49 \times V \times 10^6}{B \times f \times T \times SF}$$

where:

$V$ = rms volts
$T$ = turns
$B$ = induction in gauss
$A$ = gross core area in square inches
$f$ = frequency in cycles per second
$SF$ = space factor=95% (for 12-mil Hipersil cores)
90% (for 4-mil Hipersil cores)

Solving this equation gives the gross core area necessary to satisfy the assigned conditions.

Checking the number of turns, wire size, amount of insulation needed and assembly clearances will give an approximation of the core window size required. From the list of standard cores, select one nearest to the calculated gross area (D x E) and estimated window size (F x G). This, then will be an approximate design.

To calculate losses and exciting current, proceed as follows:

$$\text{core weight}=KDE\,(2(F+G)+\pi E-1.717R)=KDEL_c$$

where:

$K$=0.262 (for 12 mil)
D, E, F, G = core dimensions
$L_c$ = mean length of core flux path
core loss (TW) = weight x TW/pound (see curve)
exciting volt-amperes (AW) = weight x AW/pound
(see curve + gap AW)
gap AW = $1.43\ V/T \times B \times L \times SF$

where:

$V/T$ = volts per turn of coil
$SF$ = space factor (=.95 for 12 mil cores)
$B$ = induction in gauss
$L$ = total core joint gap length in inches

$L$=.001 for cores with build-up (E) of 1 inch or less and cross-sectional area 2¼ square inches or less and window width (F) less than 1⅝ inches and window length (G) less than 4³⁄₁₆ inches

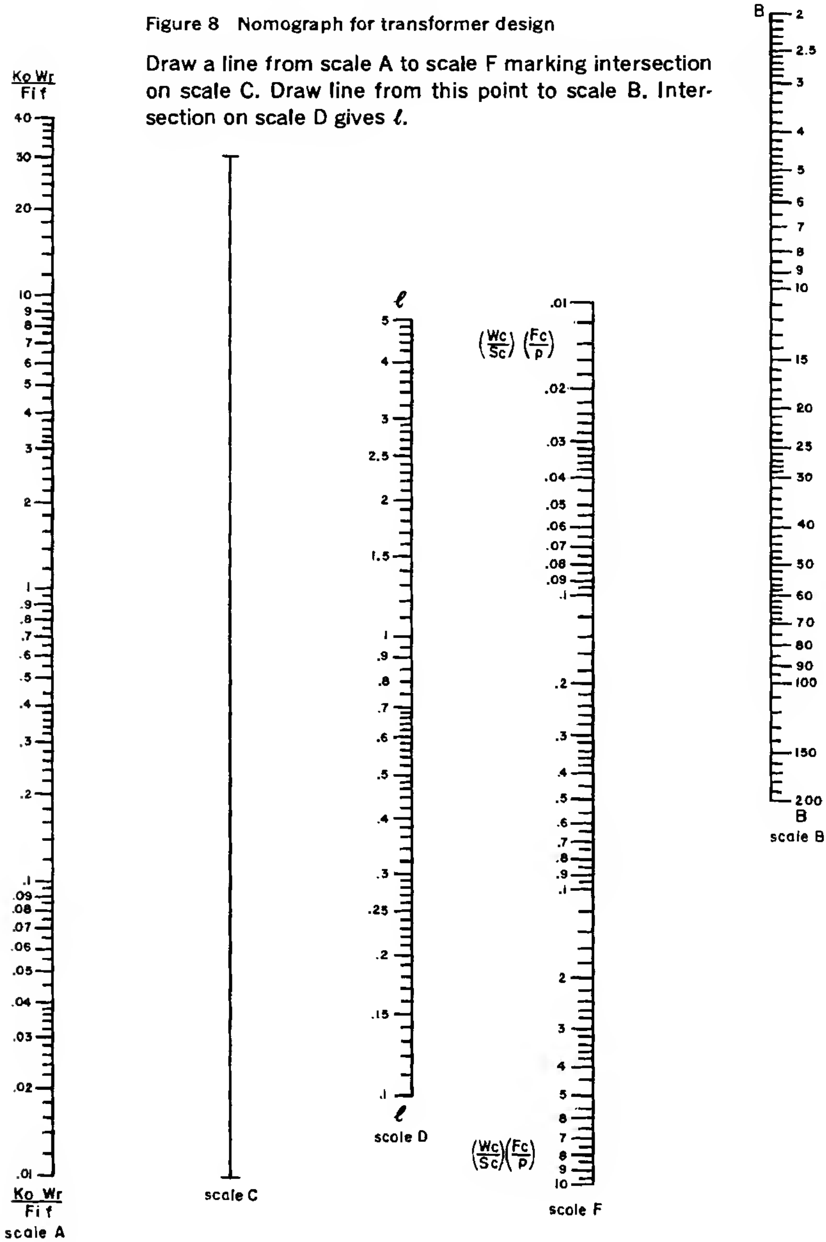
$L$=.002 for larger cores
These are the maximum total joint gap lengths of the completed cores.

If the loss and exciting current calculated above do not meet the desired values, a new trial may be made using other values of V/T and/or B.

When the desired values are obtained, check core dimensions on tolerance drawings and proceed with final transformer design.

Figure 8 Nomograph for transformer design

Draw a line from scale A to scale F marking intersection on scale C. Draw line from this point to scale B. Intersection on scale D gives $\ell$.



# WESTINGHOUSE DESIGN METHOD

The initial steps in design procedure are for the purpose of selecting the characteristic linear dimension ($\ell$) from the nomograph. Subsequent steps then take this dimension ($\ell$) and substitute it in design equations containing dimensionless constants based on core proportions. The characteristic dimension ($\ell$) is selected from the nomograph by feeding in known quantities of a design. These known quantities are based on volt-ampere rating, ferquency, temperature rise, working voltage, number of windings and type of iron. Supporting curves assist in supplying such quantities as copper space factor, watts copper loss per unit of coil exposed surface area, and flux density in the core. See figure 8.

## A. Selection of Characteristic Dimension ($\ell$)

(1) calculate volt-ampere rating ($W_r$)
For filament transformers $W_r$ is the rated volt-ampere output. For transformers with plate windings the $W_r$ is the average between the secondary volt-ampere output and the primary volt-amperes.

(2) calculate copper space factor ($F_c$)
(a) Find the equivalent volt-ampere rating $W_r'$.

$$W_r' = \frac{W_r}{\left(\frac{f}{60}\right)^{.76}\left(\frac{\Delta T}{40}\right)^{.63}}$$

(b) Calculate copper space factor ($F_c$)
$F_c = (.08) \log_{10} W_r' + F$
F is taken from curve in figure 11.

(3) calculate the quantity $\left(\frac{K_o W_r}{f\,F_i}\right)$

| | |
|---|---|
| $K_o$ for simple type $\cong .796$ | $K_o$ for shell type $\cong .846$ |
| $K_o$ for core type $\cong .785$ | $F_i$ for wound core $\cong .90$ |

(4) calculate $\frac{F_c W_c}{\rho S_c}$

$\rho = 1.15$ ohm-cm (copper resistivity)

$\left(\frac{W_c}{S_c}\right)$ is the watts copper loss per square inch of coil exposed surface from curve in figure 12.

(5) select flux density (B)
(B) is selected from curve in figure 10.

(6) Find the characteristic linear dimension ($\ell$) from nomograph figure 8.

note: Instructions are given on the nomograph.

## B. Standard Cores

(1) Refer to the lists of suggested cores in table A, depending on whether a simple, core, or shell type construction has been chosen. Select the characteristic dimension ($\ell$) nearest the value found in step (6). If this value falls between two values of ($\ell$) on the suggested core tables, the larger value should be selected. For the remainder of the calculations the ($\ell$) selected from the suggested core tables should be used.

(2) calculate winding exposed surface $S_c$

$$S_c = K_3 \ell^2$$

$K_3$ is selected from suggested core table A

(3) calculate copper losses ($W_c$)

$$W_c = \left(\frac{W_c}{S_c}\right) S_c$$

$\left(\frac{W_c}{S_c}\right)$ is taken from curve in figure 12.

(4) calculate percent regulation

$$\% \text{ regulation} = W_c / W_r \times 100$$

(5) calculate copper weight ($M_c$)

$$M_c = (K_4 \, F_c \, \alpha_c) \ell^3$$

$K_4$ is from suggested core table A

$\alpha_c$ copper density is .321 lbs per cubic inch

(6) calculate turns per volt (N/V)

$$N/V = \frac{K_6}{f \, F_i \, B \, \ell^2}$$

B is from curve in figure 10

$K_6$ is from suggested core table A

(7) determine primary turns ($N_p$)

$$N_p = V_p \left(\frac{N}{V}\right)$$

$V_p$ is the primary rms voltage

(8) calculate secondary turns ($N_s$)

$$N_s = \left(1 + \frac{\% \text{ Regulation}}{100}\right) (V_s)(N/V)$$

$V_s$ is the secondary rms voltage under rated load conditions

(9) calculate core loss ($W_i$)

$$W = (\text{watts/pound})(M_i)(1.25)$$

Watts/pound from core loss curve in figure 9

$M_i$ is core weight from suggested core table A

(10) calculate exciting volt-amperes ($W_{ex}$)

$$W_{ex} = W_{ex\ \text{iron}} + W_{ex\ \text{butt-joint}}$$

(a) $W_{ex\ \text{iron}} = (\text{apparent watts/pound})(M_i)(1.25)$

Apparent watts/pound from core loss curve in figure 9

(b) $W_{ex\ (\text{butt-joint})} = \dfrac{(.221)(B)(V_p)(F_i)}{N_p}$

(11) calculate circular mils per ampere (CM/A)

$$CM/A = \sqrt{\frac{\frac{\ell}{F_c W_c}}{\rho S_c}\,(K_5)\,(F_c)}$$

$K_5$ is from the suggested core table A
$F_c$ was previously calculated in paragraph A.(2)

(12) determine primary volt-amperes
Pri volt-amperes$=(W_r + W_c + W_i) + jW_{ex}$

(13) calculate primary current ($I_p$)

$$I_p = \frac{\text{Primary VA}}{\text{Primary Voltage}}$$

(14) calculate primary wire size
Circular mils of primary wire$=CM/A \times I_p$
Use wire size .... Awg of .... circular mils

(15) calculate wire size for each secondary
Circular mils of secondary$=(CM/A)\,(I_s)$
Use wire size .... Awg of .... circular mils

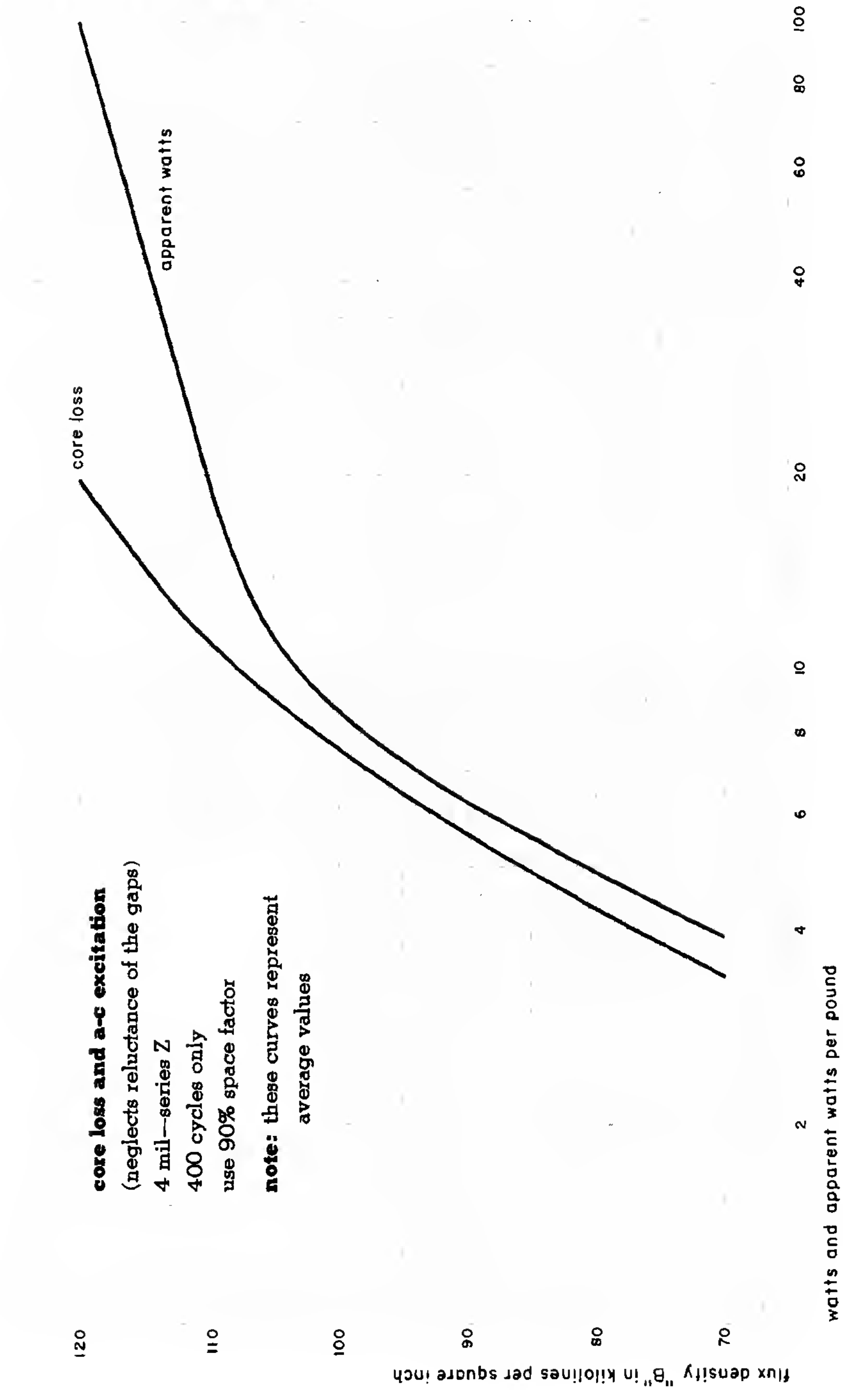
## Table A—Constant for Design Equations

| core dimensions in inches | | | | weight in lbs | $\ell$ | constants for design equations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D | E | F | G | | | $K_0$ | $K_1$ | $K_3$ | $K_4$ | $K_5$ | $K_6$ |
| **SIMPLE TYPE** | | | | | | | | | | | |
| 5/8 | 3/16 | 1/4 | 7/8 | .0455 | .3515 | .765 | 4.58 | 16.35 | 9.56 | 973 | 39,600 |
| 1/2 | 1/4 | 5/16 | 1 | .1024 | .444 | .766 | 4.85 | 15.05 | 8.84 | 975 | 35,500 |
| 1/2 | 1/4 | 5/16 | 1 1/16 | .1062 | .452 | .762 | 4.8 | 15.5 | 8.94 | 969 | 36,600 |
| 5/8 | 5/16 | 3/8 | 1 | .176 | .52 | .781 | 5.19 | 13.35 | 8.15 | 994 | 31,180 |
| 5/8 | 3/16 | 7/16 | 1 5/16 | .199 | .56 | .794 | 4.58 | 14.9 | 9.39 | 1010 | 36,600 |
| 3/4 | 3/8 | 7/16 | 1 3/8 | .362 | .669 | .745 | 5.0 | 15.45 | 8.64 | 947 | 35,700 |
| 3/4 | 5/8 | 1/2 | 1 3/4 | .388 | .705 | .765 | 4.58 | 16.35 | 9.56 | 973 | 39,600 |
| 7/8 | 7/16 | 5/16 | 1 11/16 | .548 | .776 | .766 | 5.26 | 15.3 | 9.15 | 975 | 33,000 |
| 7/8 | 7/16 | 5/8 | 1 15/16 | .607 | .825 | .784 | 4.43 | 15.75 | 9.95 | 996 | 44,100 |
| 1 | 1/2 | 5/8 | 1 15/16 | .816 | .881 | .771 | 4.85 | 14.7 | 8.74 | 980 | 35,100 |
| 1 | 1/2 | 5/8 | 2 1/8 | .851 | .928 | .762 | 4.8 | 15.5 | 8.94 | 969 | 36,600 |
| 1 1/8 | 5/16 | 3/4 | 2 5/16 | 1.205 | 1.026 | .776 | 4.67 | 15.4 | 9.28 | 988 | 37,100 |
| 1 1/4 | 3/8 | 3/4 | 2 3/4 | 1.7 | 1.126 | .751 | 4.9 | 15.63 | 8.83 | 955 | 36,600 |
| 1 1/4 | 3/8 | 3/4 | 3 | 1.79 | 1.152 | .743 | 4.86 | 16.4 | 9.02 | 945 | 38,100 |
| 1 3/8 | 11/16 | 15/16 | 3 1/4 | 2.42 | 1.303 | .766 | 4.51 | 16.55 | 9.76 | 961 | 40,400 |
| 1 1/2 | 3/4 | 15/16 | 3 1/2 | 3.1 | 1.388 | .752 | 4.74 | 16.2 | 9.16 | 955 | 38,300 |
| **CORE TYPE** | | | | | | | | | | | |
| 3/8 | 5/32 | 3/16 | 5/16 | .0274 | .28 | .68 | 5.27 | 14.08 | 6.46 | 865 | 30,100 |
| 5/8 | 3/16 | 1/4 | 11/16 | .041 | .33 | .707 | 4.78 | 14.3 | 7.08 | 900 | 35,000 |
| 1/2 | 7/32 | 1/4 | 3/4 | .070 | .378 | .695 | 5.15 | 13.71 | 6.47 | 883 | 30,750 |
| 1/2 | 1/4 | 5/16 | 7/8 | .0946 | .43 | .696 | 4.96 | 14.1 | 6.84 | 886 | 33,000 |
| 5/8 | 9/32 | 5/8 | 1 | .154 | .507 | .706 | 4.91 | 13.84 | 6.89 | 899 | 32,800 |
| 3/4 | 5/16 | 7/16 | 1 1/8 | .233 | .582 | .715 | 4.86 | 13.66 | 6.98 | 910 | 32,600 |
| 3/4 | 3/8 | 7/16 | 1 1/4 | .309 | .627 | .691 | 5.14 | 13.83 | 6.62 | 878 | 31,800 |
| 7/8 | 3/8 | 1/2 | 1 5/16 | .382 | .681 | .706 | 4.98 | 13.61 | 6.79 | 897 | 31,800 |
| 7/8 | 3/8 | 1/2 | 1 7/16 | .402 | .697 | .698 | 4.9 | 14.28 | 6.97 | 889 | 33,300 |
| 1 | 7/16 | 5/16 | 1 1/2 | .585 | .778 | .70 | 5.08 | 13.6 | 6.68 | 890 | 31,200 |
| 1 | 1/2 | 5/8 | 1 5/8 | .74 | .844 | .702 | 5.04 | 13.6 | 6.72 | 895 | 32,000 |
| 1 1/8 | 1/2 | 11/16 | 1 3/4 | .884 | .906 | .717 | 4.86 | 13.7 | 7.01 | 911 | 32,700 |
| 1 1/4 | 5/16 | 3/4 | 2 | 1.25 | 1.014 | .702 | 4.91 | 13.85 | 6.88 | 895 | 32,800 |
| 1 3/8 | 5/8 | 3/4 | 2 1/4 | 1.65 | 1.097 | .682 | 5.2 | 14.21 | 6.62 | 867 | 31,440 |
| 1 1/2 | 3/8 | 7/8 | 2 1/2 | 1.975 | 1.19 | .706 | 4.77 | 14.4 | 7.19 | 897 | 34,400 |
| 1 5/8 | 3/4 | 1 | 2 1/2 | 2.76 | 1.322 | .713 | 4.96 | 13.45 | 6.85 | 905 | 32,100 |
| **SHELL TYPE** | | | | | | | | | | | |
| 3/8 | 3/32 | 1/4 | 3/4 | .0382 | .286 | .85 | 2.42 | 7.88 | 9.14 | 1080 | 36,700 |
| 3/8 | 1/8 | 5/16 | 7/8 | .0618 | .336 | .84 | 2.48 | 7.42 | 9.5 | 1069 | 38,400 |
| 3/8 | 1/8 | 5/16 | 1 | .0722 | .348 | .828 | 2.49 | 6.95 | 9.89 | 1052 | 41,000 |
| 1/2 | 5/32 | 3/8 | 1 1/2 | .1312 | .426 | .834 | 2.39 | 7.64 | 9.07 | 1061 | 36,900 |
| 5/8 | 3/16 | 7/16 | 1 1/4 | .224 | .504 | .84 | 2.29 | 8.16 | 8.68 | 1069 | 34,300 |
| 5/8 | 3/16 | 1/2 | 1 1/2 | .26 | .545 | .843 | 2.51 | 7.16 | 9.88 | 1071 | 40,000 |
| 3/4 | 7/32 | 5/16 | 1 1/2 | .382 | .61 | .854 | 2.42 | 7.96 | 9.16 | 1086 | 36,100 |
| 3/4 | 7/32 | 5/16 | 1 3/4 | .424 | .634 | .837 | 2.46 | 7.38 | 9.5 | 1064 | 38,900 |
| 3/4 | 1/4 | 5/8 | 1 7/8 | .528 | .685 | .834 | 2.482 | 7.18 | 9.7 | 1060 | 39,800 |
| 7/8 | 1/4 | 11/16 | 2 | .658 | .741 | .85 | 2.76 | 7.28 | 9.86 | 1080 | 39,800 |
| 1 | 9/32 | 3/4 | 2 | .876 | .806 | .857 | 2.42 | 7.88 | 9.45 | 1090 | 36,700 |
| 1 | 5/16 | 1 5/16 | 2 1/4 | 1.068 | .87 | .849 | 2.475 | 7.46 | 9.66 | 1080 | 38,400 |
| 1 1/8 | 3/16 | 7/8 | 2 1/2 | 1.308 | .937 | .852 | 2.536 | 7.35 | 9.94 | 1082 | 39,650 |
| 1 1/4 | 3/8 | 1 | 2 3/4 | 1.968 | 1.06 | .852 | 2.48 | 7.5 | 9.7 | 1082 | 38,400 |
| 1 3/8 | 3/8 | 1 1/8 | 3 | 2.36 | 1.15 | .864 | 2.61 | 7.23 | 10.0 | 1098 | 40,600 |
| 1 1/2 | 7/16 | 1 1/8 | 3 1/4 | 3.224 | 1.245 | .845 | 2.45 | 7.66 | 9.3 | 1075 | 37,500 |

**SYMBOLS USED**

$W_r$ rating, volt-amperes
$F_c$ copper space factor
$F_i$ iron space factor
$B$ flux density, kilolines per square inch
$f$ frequency cycles per second
$A_c$ window area, square inches
$A_i$ core cross-sectional area, square inches
$V$ rms potential, volts
$\Delta T$ temperature rise, degrees centigrade
$\ell$ characteristic linear dimension, inches
$\rho$ conductor resistivity, microhm-inches
$I$ rms current, amperes
$W_c$ winding loss, watts
$N$ turns of a winding
$W_i$ core loss, watts
$W_{ex}$ exciting voltamperes
$M_c$ copper weight, lbs
$M_i$ iron weight, lbs
$K_0$, $K_1$, $K_3$, $K_4$, $K_5$, $K_6$ are constants used with design equations
$\alpha_i$ density of iron, pounds per cu. in.
$\alpha_c$ density of conductor, pounds per cu. in.
$S_c$ exposed area of coil surface, square inches

Figure 9 Core loss and a-c excitation



## Figure 10 Volt ampere rating and flux density

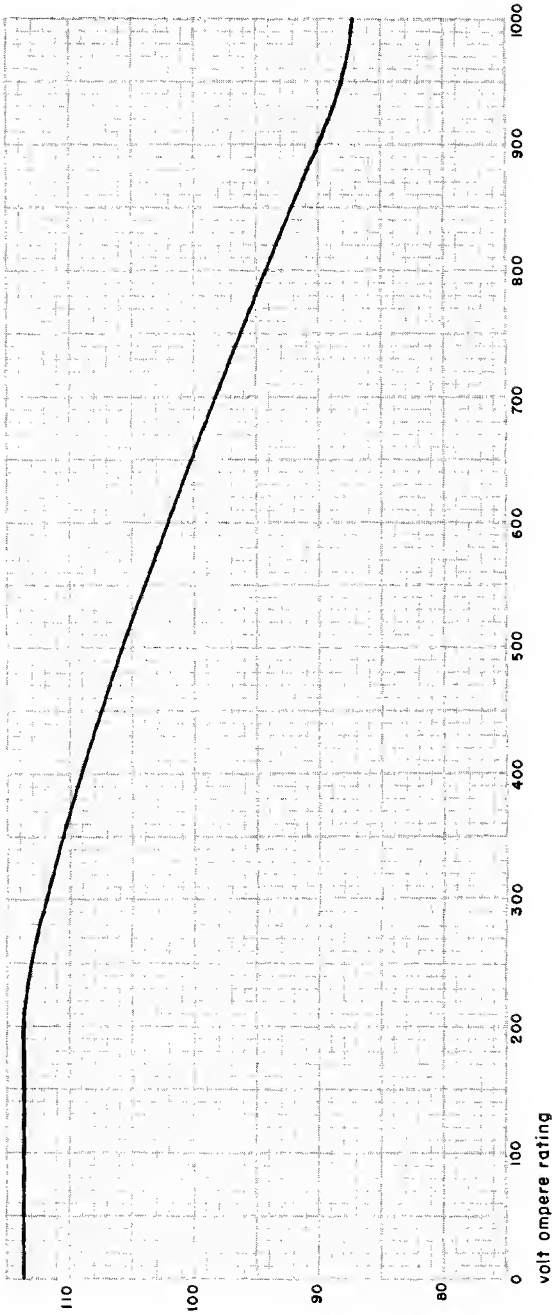


Figure 11 Winding space factor

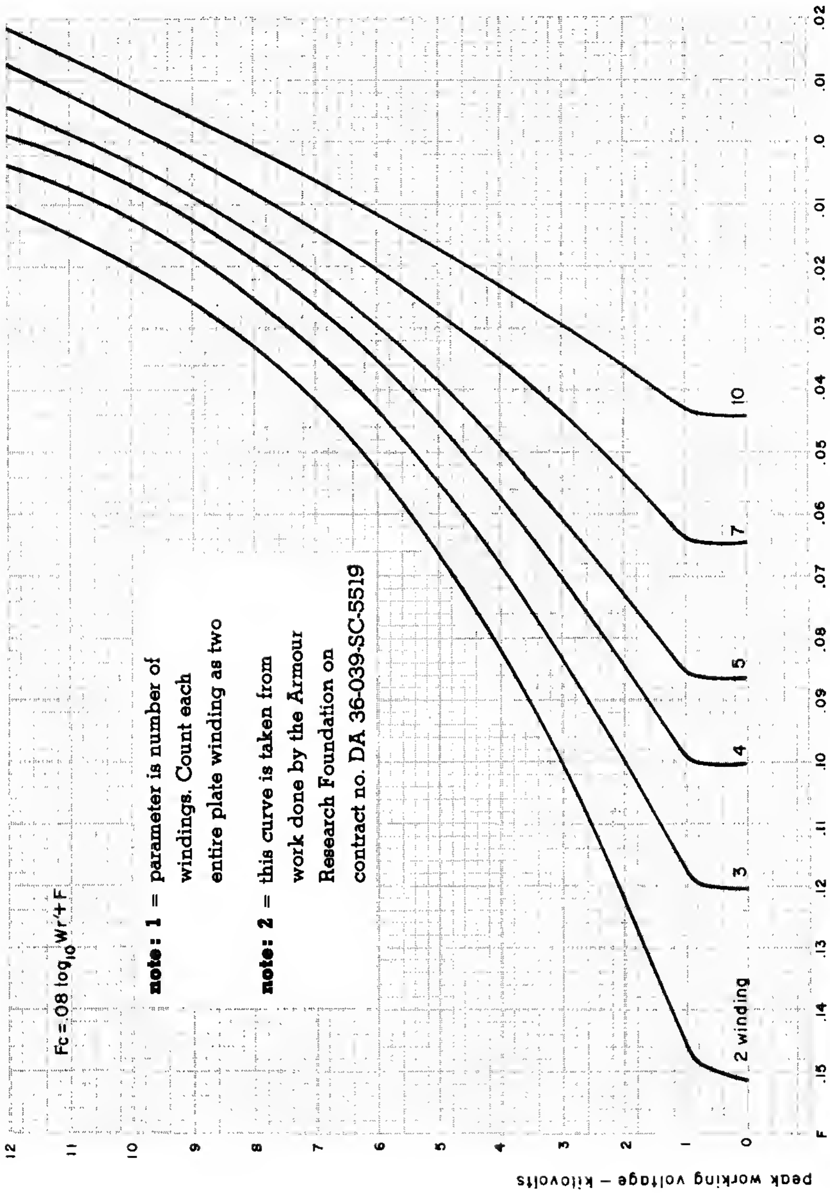
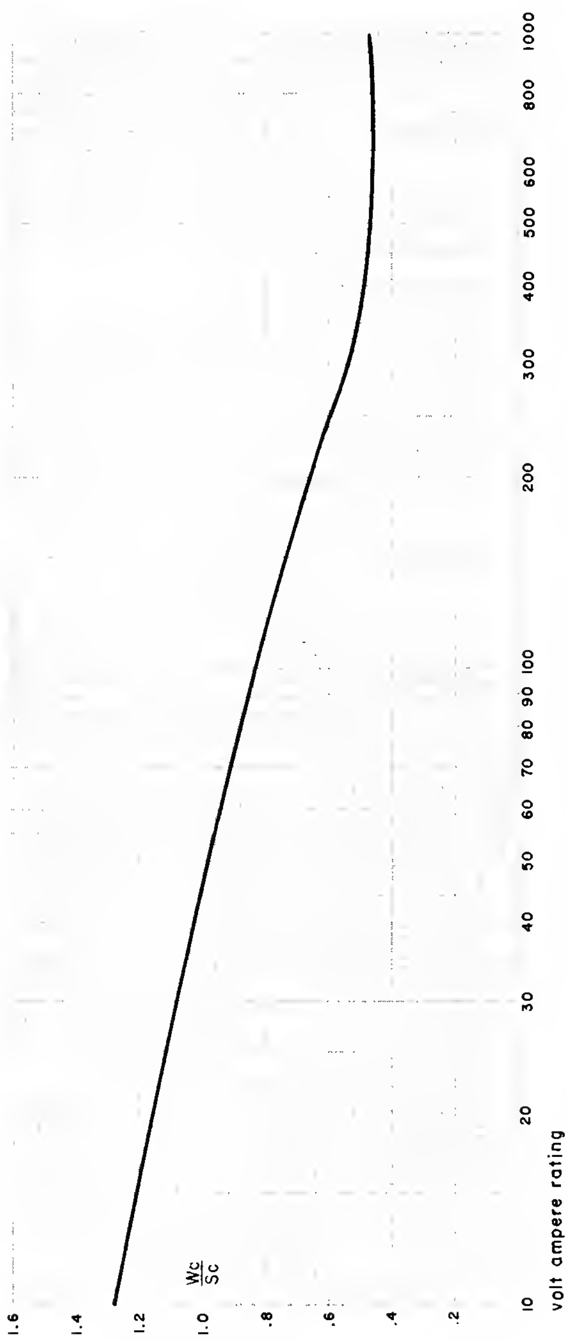


Figure 12 Copper loss per square inch of exposed surface



# FILTER REACTOR DESIGN METHODS AND FORMULAS

The design and choice of core for reactors depend upon three inter-related factors:

1. desired inductance
2. direct current
3. alternating volts

The type C Hipersil core lends itself very well to these applications because the air gap can be regulated or set to any desired value and because the incremental permeability is comparatively high even at high d-c inductions. The inductance of an iron-core reactor is dependent on the effective length of the magnetic path. This effective length is the sum of the air gap and the ratio of core mean length to incremental permeability.

$$L = \frac{3.2 \times T^2 \times A \times 10^{-8}}{lg + \frac{lc}{\Delta\mu}}$$

where:

$L$ = inductance in henries
$T$ = turns
$A$ = gross core area in square inches
$lg$ = effective air gap length in inches
$lc$ = core mean length in inches
$\Delta\mu$ = incremental permeability

The value of $\Delta\mu$ depends on the values of alternating and direct flux densities in the core. The sum of these densities should not exceed saturation value. Incremental permeability is shown by curves (figures 16, 24, and 29) at various values of Hd-c (oersteds of direct mmf on the core) for different values of alternating flux densities.

A designer must select a combination of core area, air gap length and number of coil turns necessary to give the proper inductance, maintaining values for Bd-c and Ba-c which will not cause magnetic saturation and which will permit the highest inductance for a given volume of core material used. The core opening size will depend on the turns, wire size and insulation requirements.

For reactors carrying direct current and operating at very low alternating flux densities, a simple design method was originated by C. R. Hanna ("Design of Reactances and Transformers which Carry Direct Current," Jour. A. I. E. E., vol. 46, Feb. 1927, p. 128). A more detailed treatment of the design of reactors is presented in "Electronic Transformers and Circuits," by Reuben Lee, John Wiley & Sons, 1955.

# BALANCING TRANSFORMERS USED WITH SILICON RECTIFIERS

Balancing transformers, as a means of forcing proper current balance, have been the subject of several technical papers and articles. Their effectiveness has been well established. These balancing transformers, or reactors as they are sometimes called, consist of laminated iron cores, usually with single turn primary and secondary windings. The currents from two cells in parallel pass through a core in opposite directions, and an unbalance between the two currents will induce a voltage which tends to correct the unbalance.

Varied designs and mechanical arrangements of cores have been used but will not be discussed here. Figure 13 is a pictorial view of an arrangement of hipersil iron "C" cores.

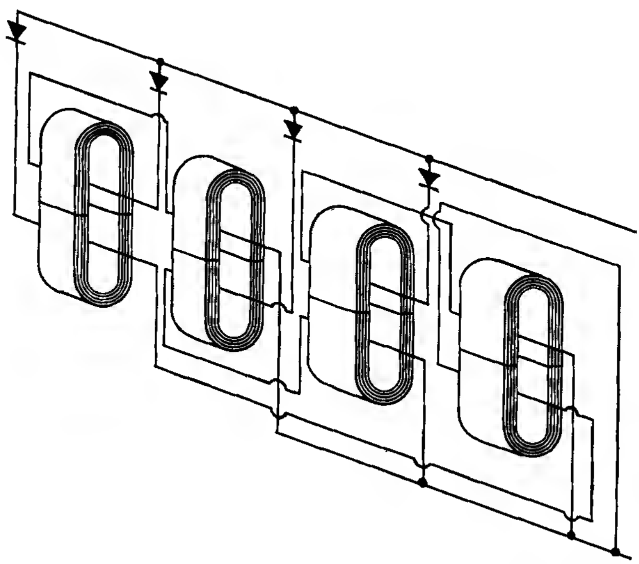


Figure 13 Hipersil iron "C" cores connected in a "chain" arrangement with four cells in parallel.

A core area of one to one and a half square inches has been found effective in reducing the unbalance between high power cells in parallel. An effective air gap of at least .001 inches should be retained in the core to reduce the possibility of saturation. The unbalance may be reduced to less than ten percent of the average current per cell with as many as six cells in parallel. With up to six cells in parallel, the cells should be operated at 90 per cent of their rating; with seven to ten cells in parallel, 85 per cent of their rating; and with 11 to 20 cells in parallel, 80 percent of their rating. In any design, current division among the cells should be measured to assure proper balancing. This may be done quite simply by inserting a shunt in place of the fuse. If the fuses are calibrated and checked for uniformity the voltage drop across the fuses will be an indication of the current division. It may not be desirable to place more than 20 cells in parallel, unless a separate transformer is used for each group of 20 cells.

Separate transformers or transformer windings may be used to supply a number of assemblies each with only one cell in parallel. Then the output of these assemblies may be connected in parallel. If separate transformer windings are used, care must be taken in the transformer design. Multiple windings on any one transformer core will not necessarily have the identical leakage reactances required to force division of current between assemblies.

If a series parallel arrangement of rectifying cells is necessary, no set rule exists which will determine whether the seriesing or the paralleling should be done first. Each has its advantages and disadvantages, depending upon the heat sink design, required fusing, necessary reliability, etc. Individual applications will determine which is most economical or practical.

# CURVE DATA

Figure 14 Core loss curve • Single phase • 12 mil

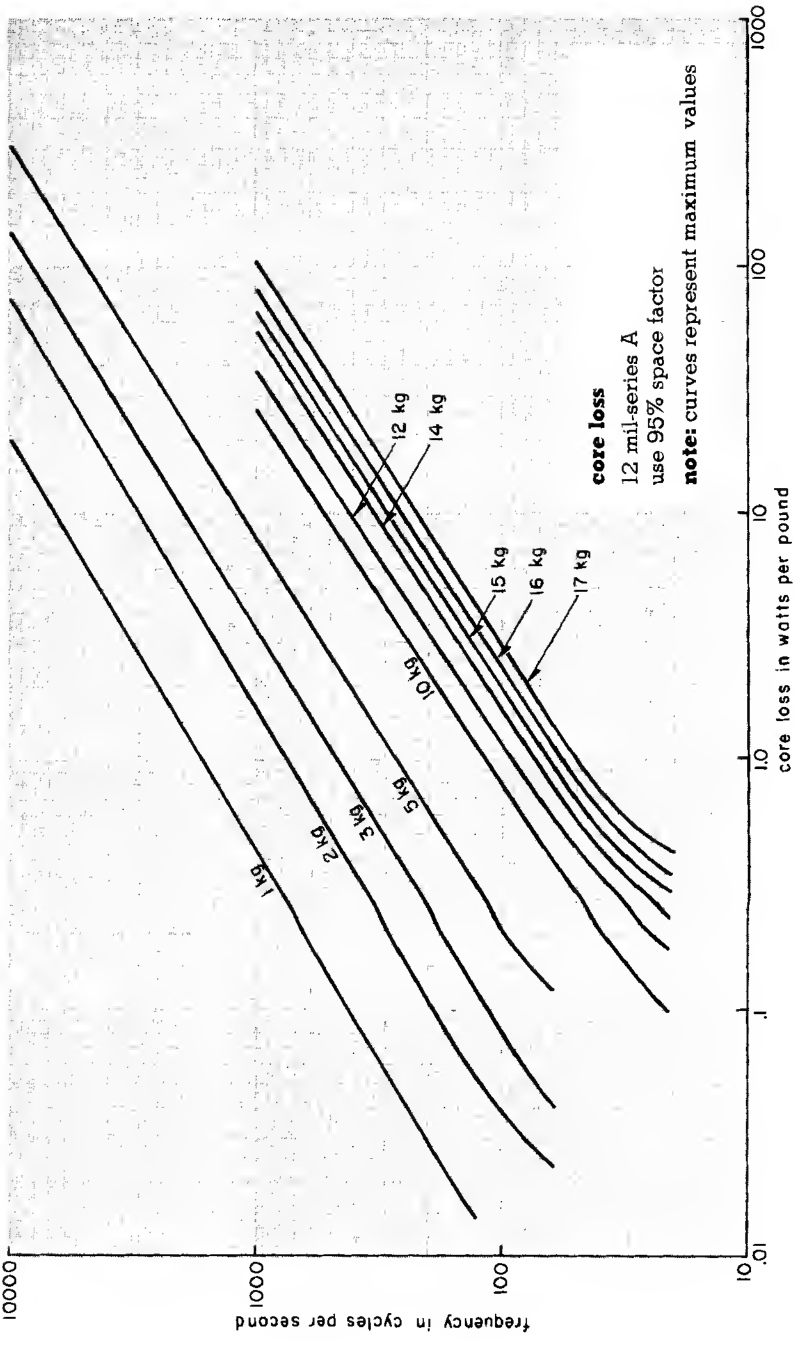


Figure 15 A-c excitation curve • Single phase • 12 mil

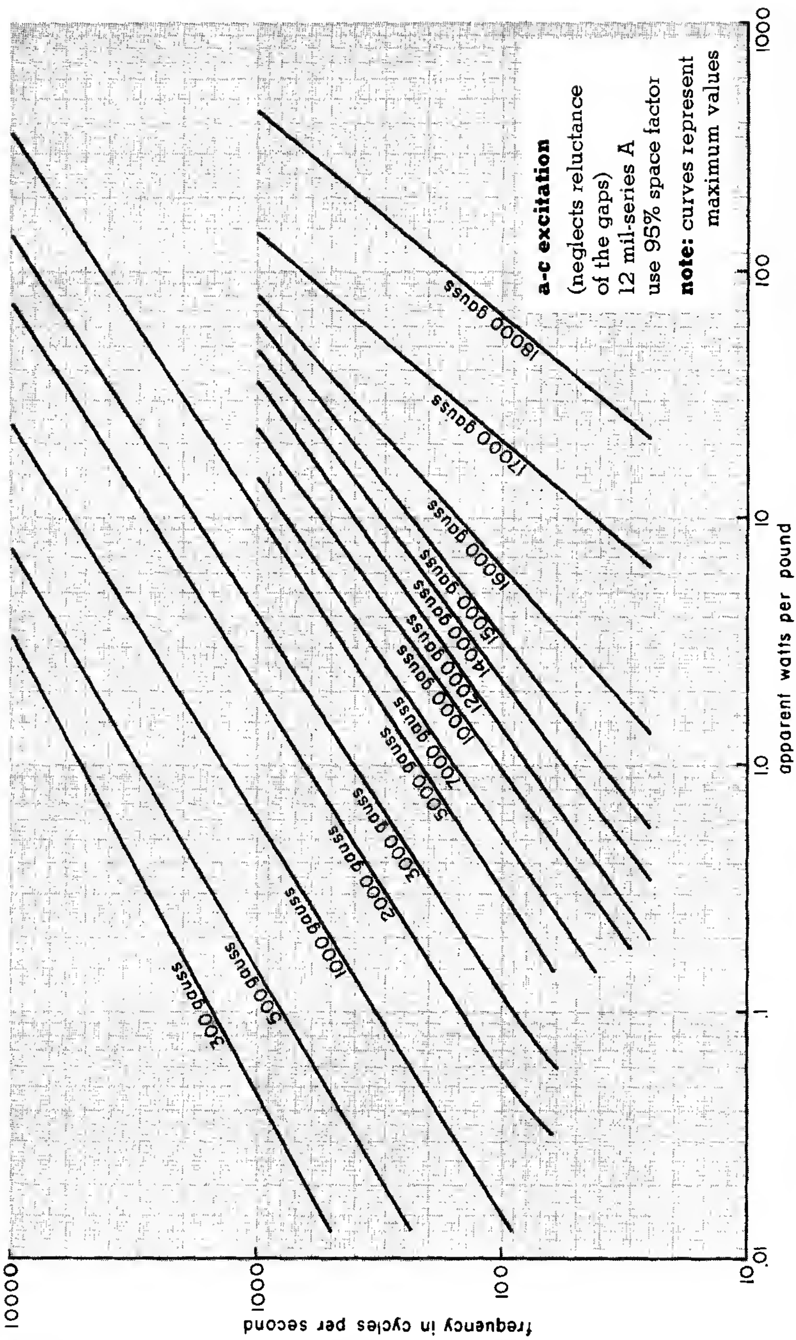


Figure 16 Incremental permeability • Single phase • 12 mil

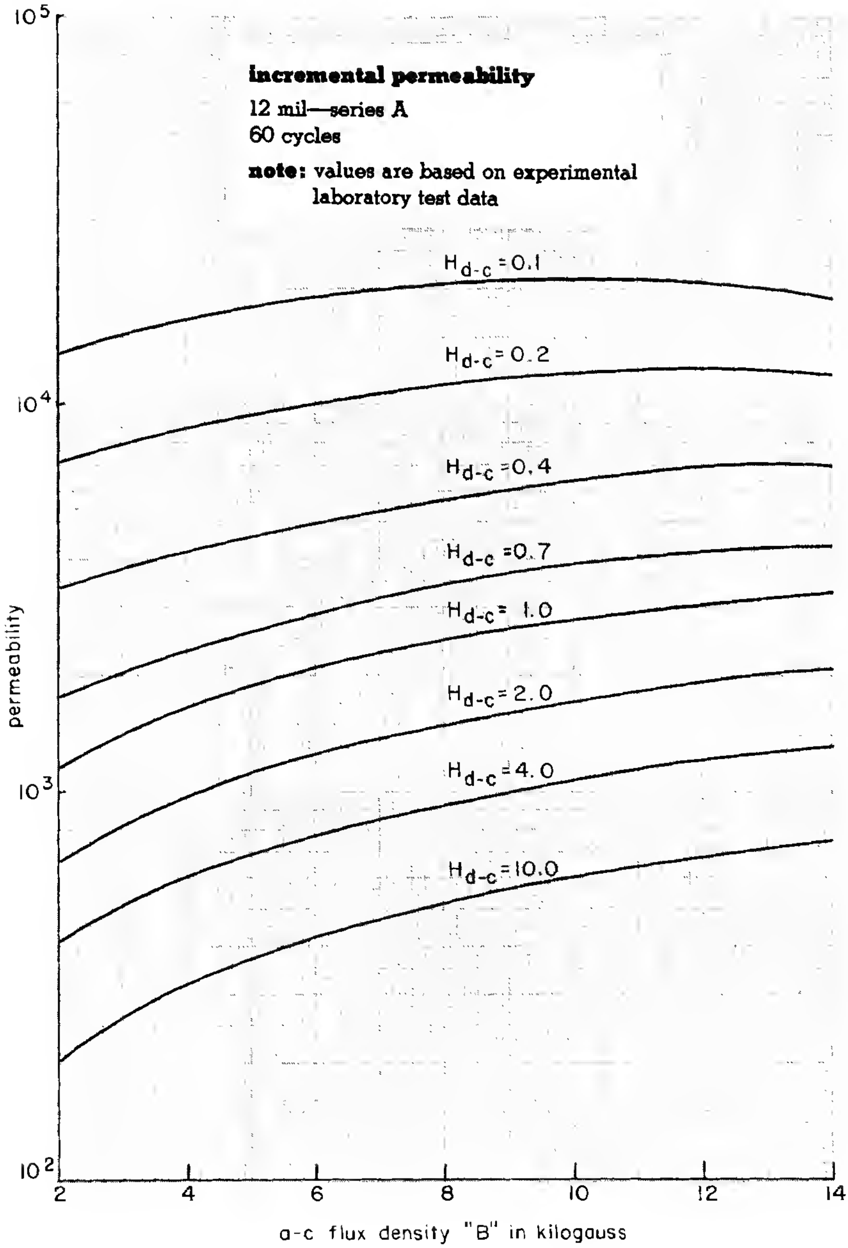


Figure 17 D-c magnetization curve • 12 mil • series A

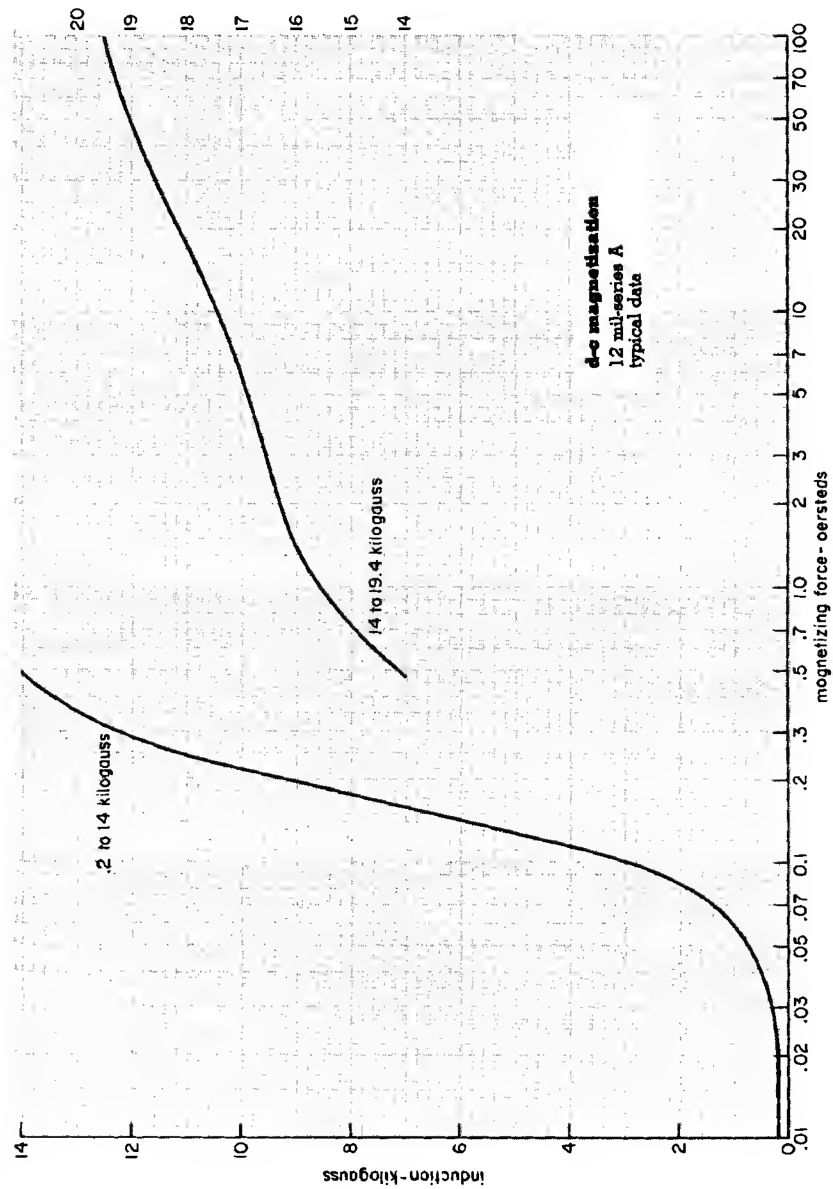


Figure 18 Core loss curve • 4 mil • series H

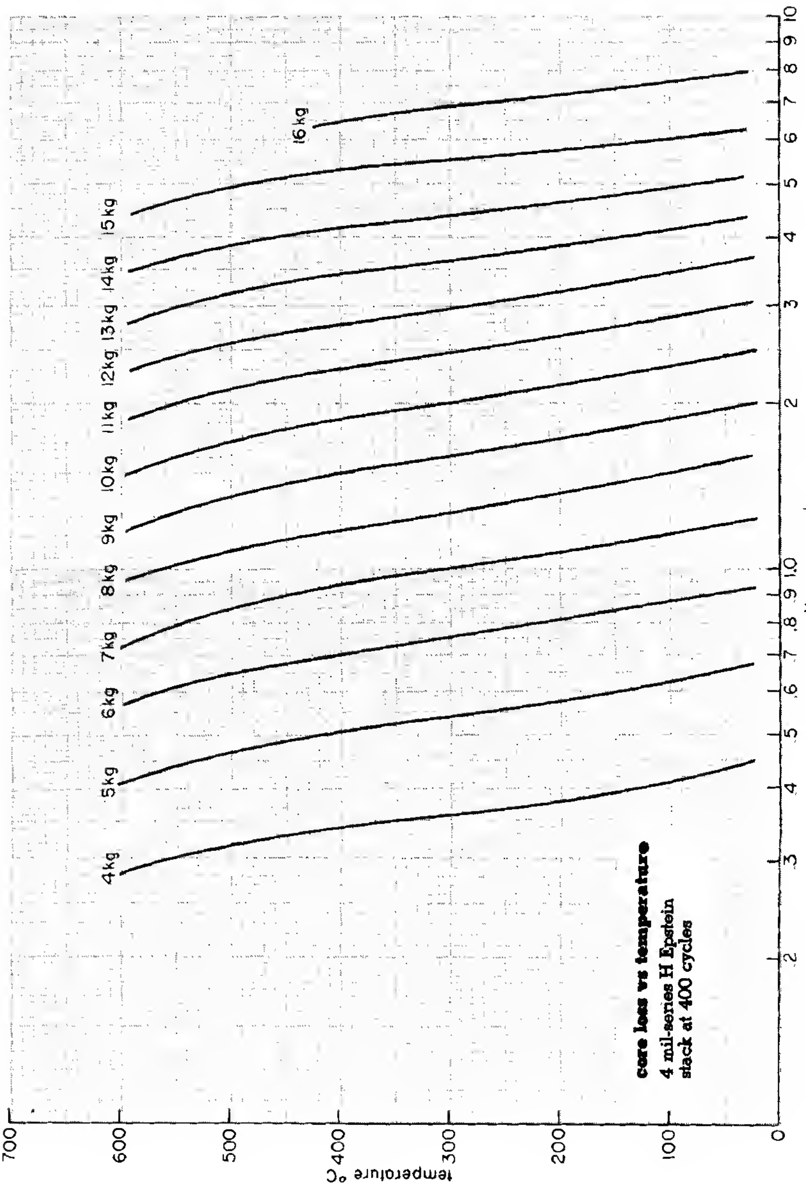


Figure 19 Watt per pound • series H

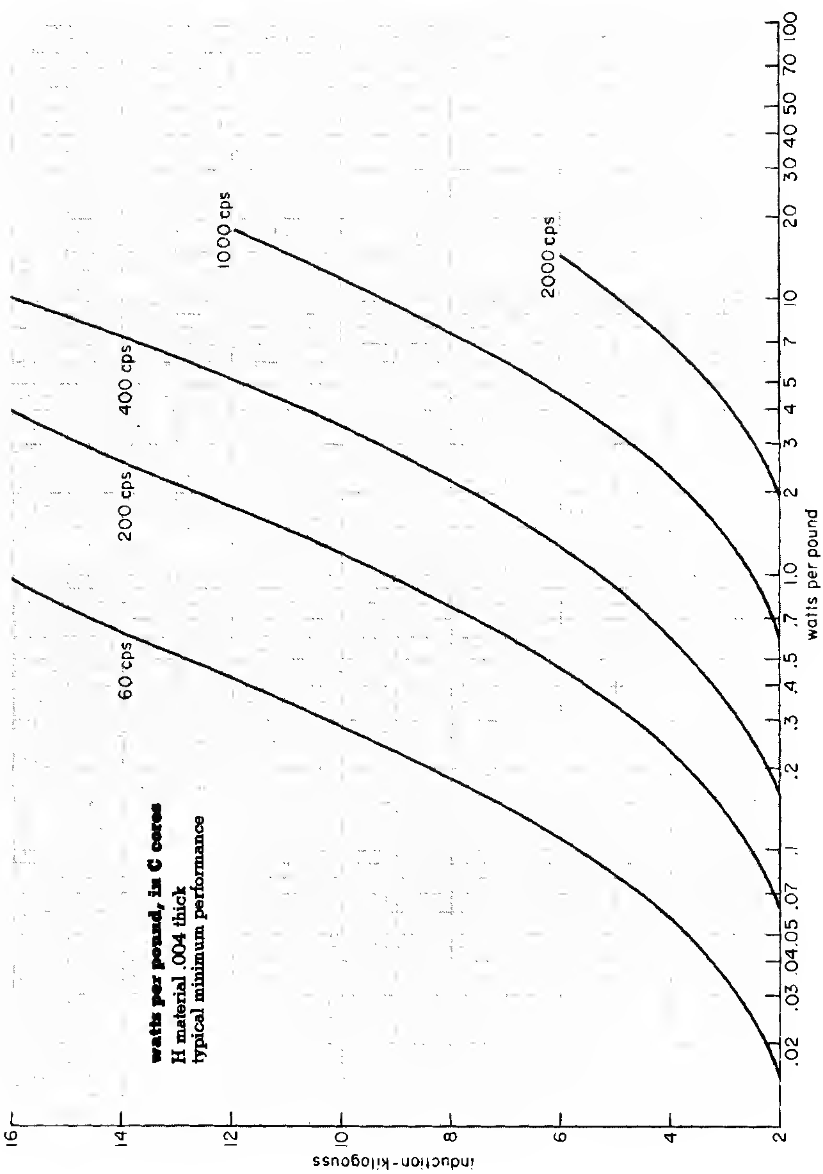


Figure 20 V-a per pound • series H

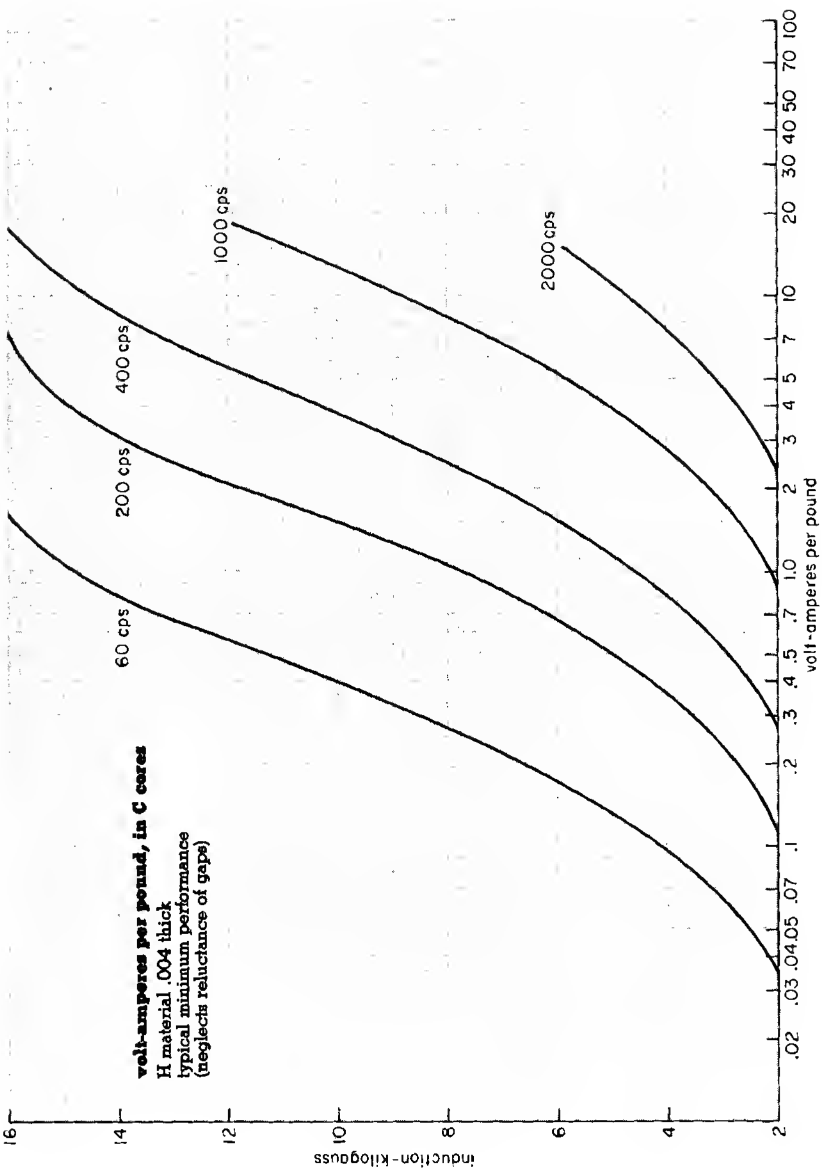


Figure 21 D-c magnetization • 4 mil • series H

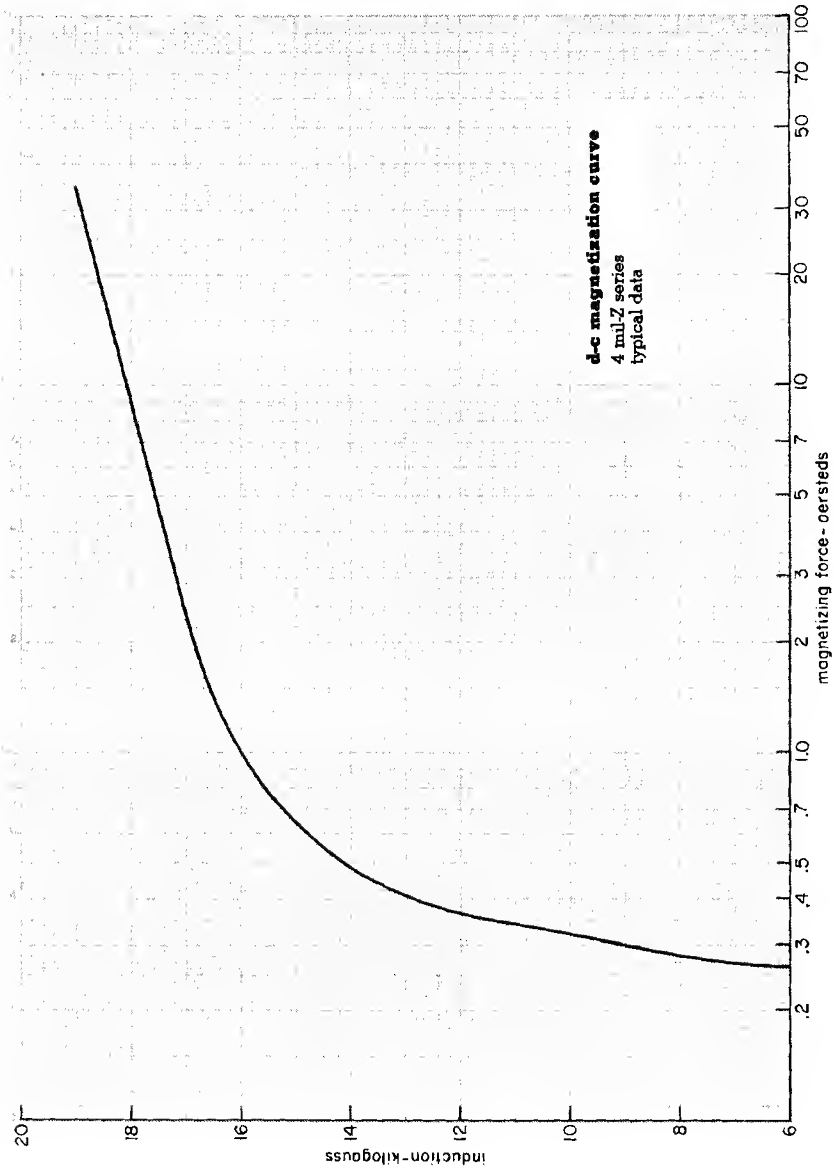


Figure 22 Core loss and excitation curve • single phase • 4 mil

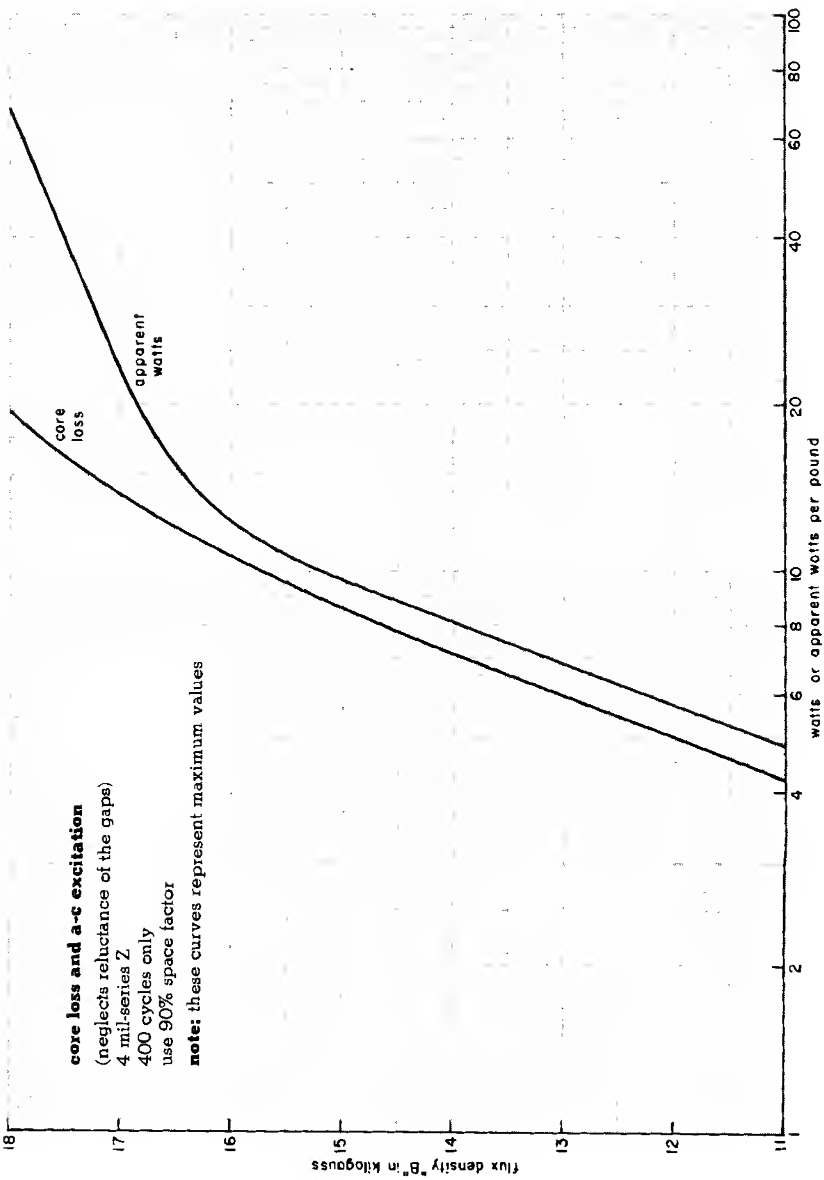


Figure 23 D-c magnetization • 4 mil • series Z

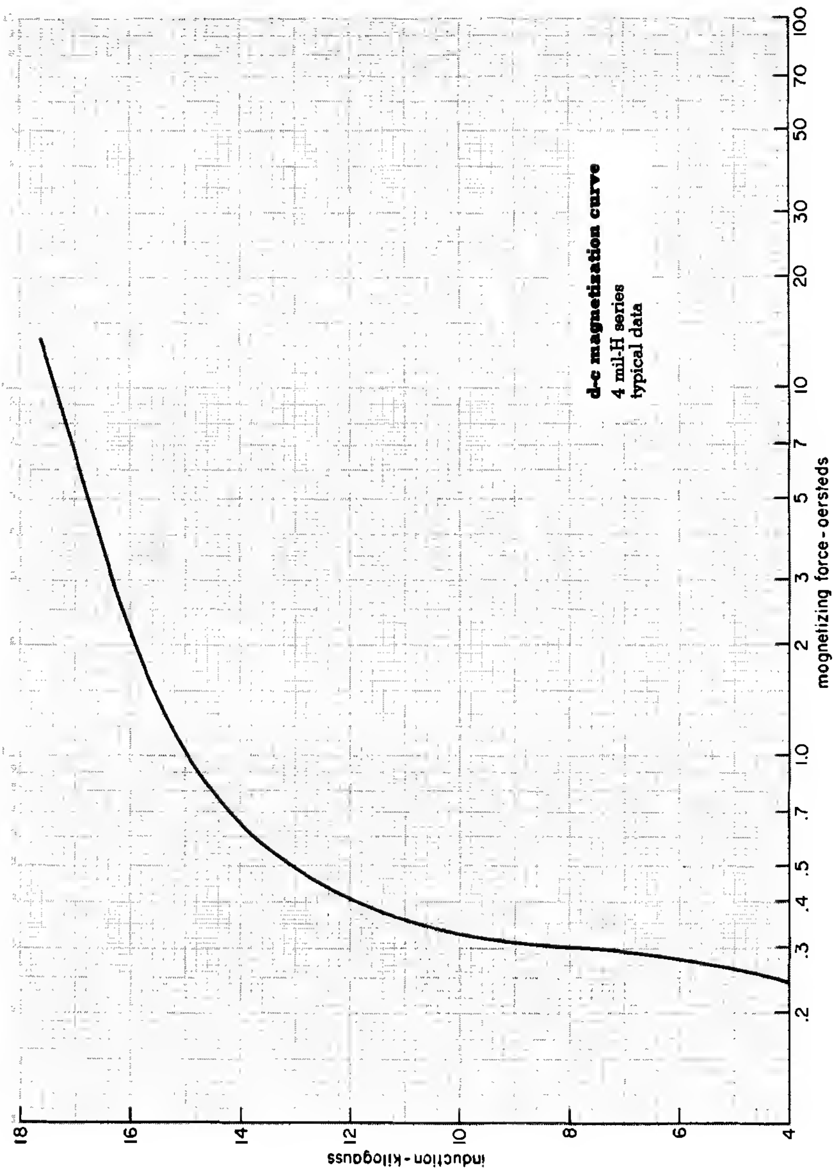


Figure 24 Incremental permeability • single phase • 4 mil

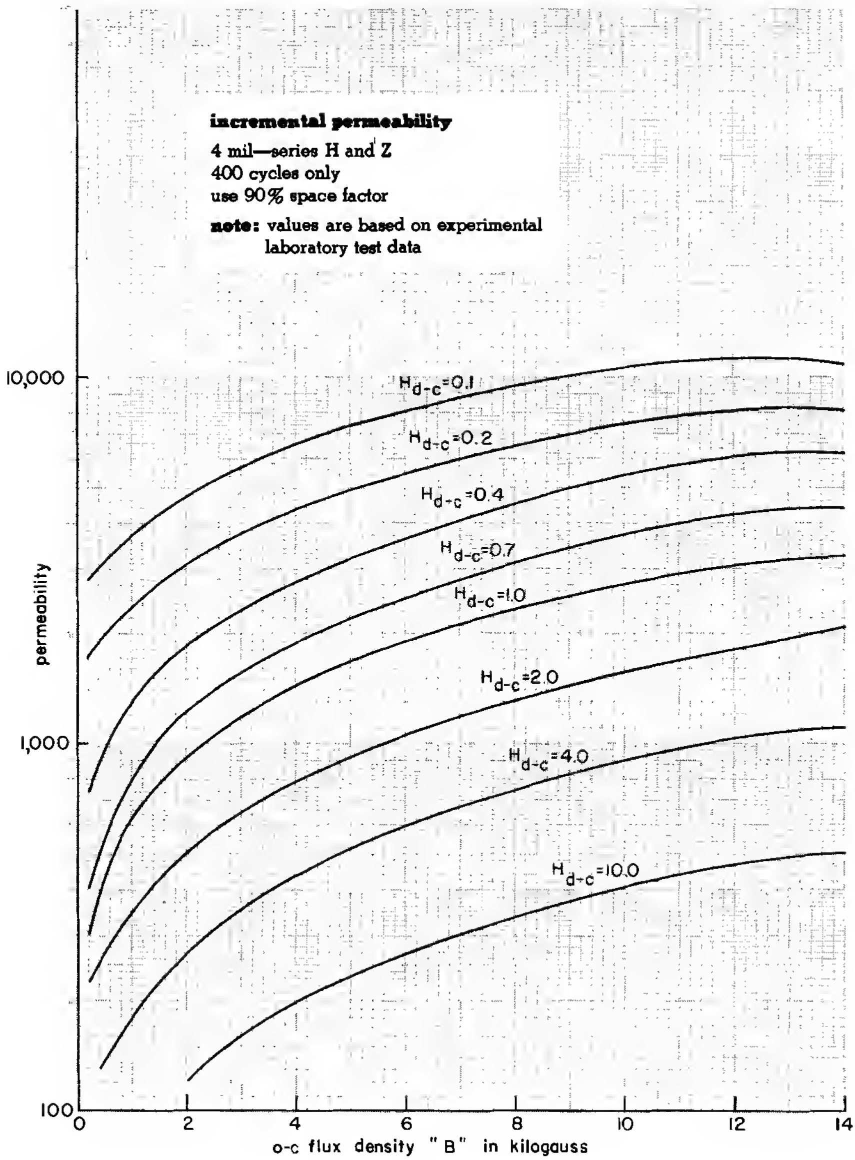


Figure 25 Core loss curve • single phase • 2 mil

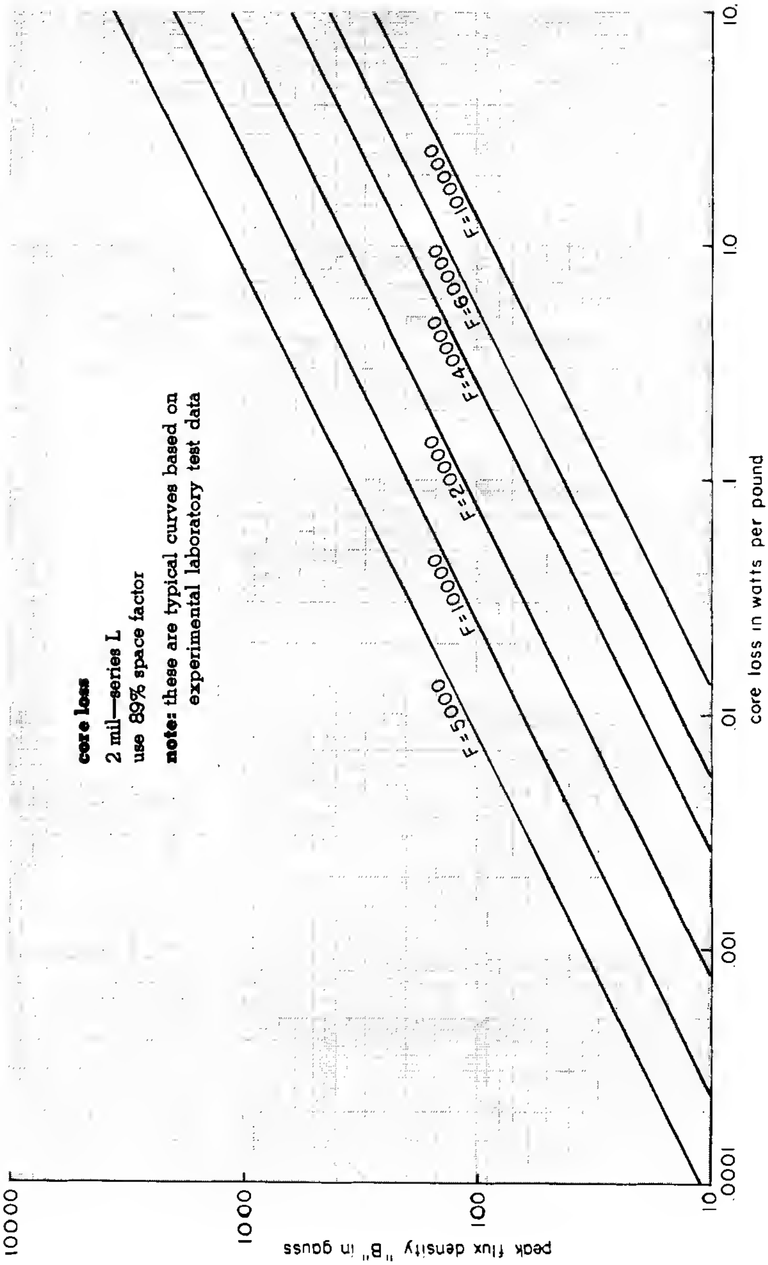


Figure 26 A-c excitation curve • single phase • 2 mil

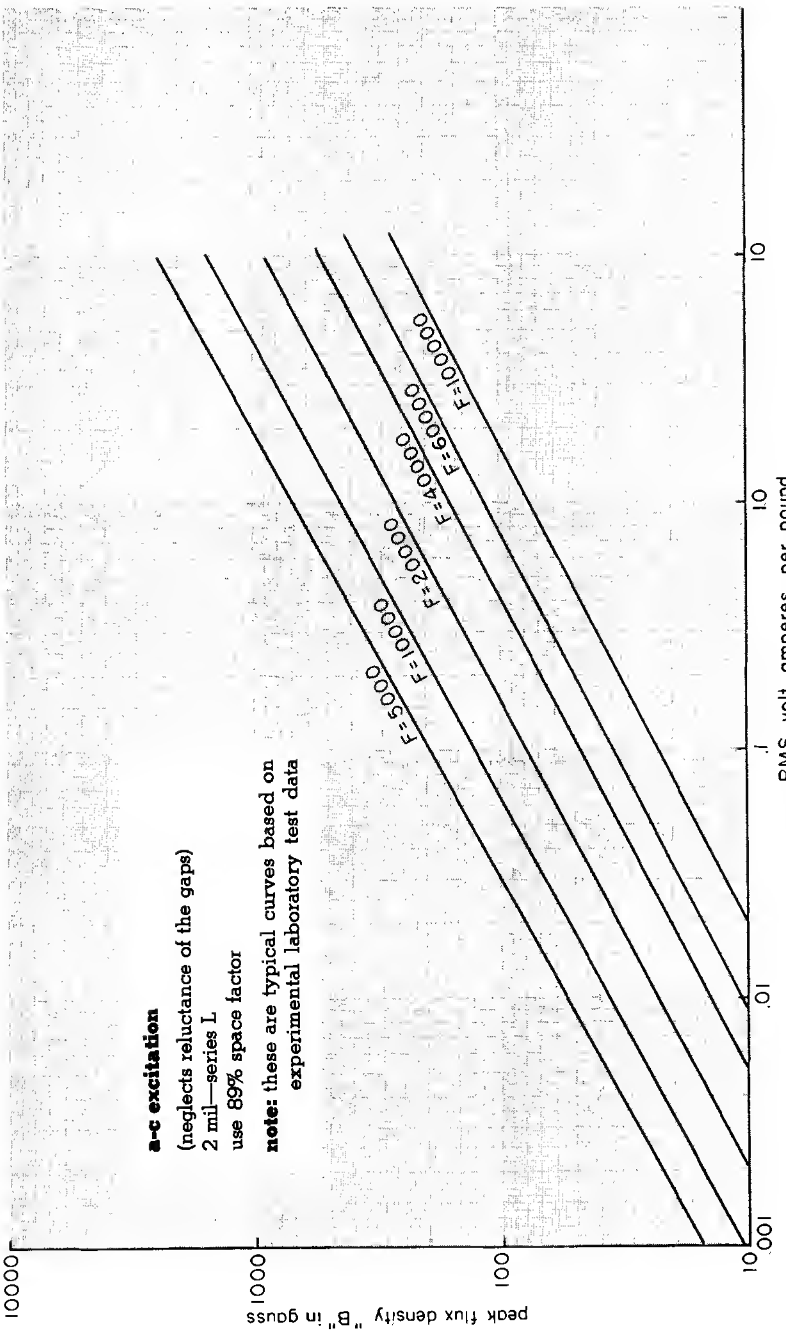


Figure 27 Pulsed excitation curve • single phase • 2 mil

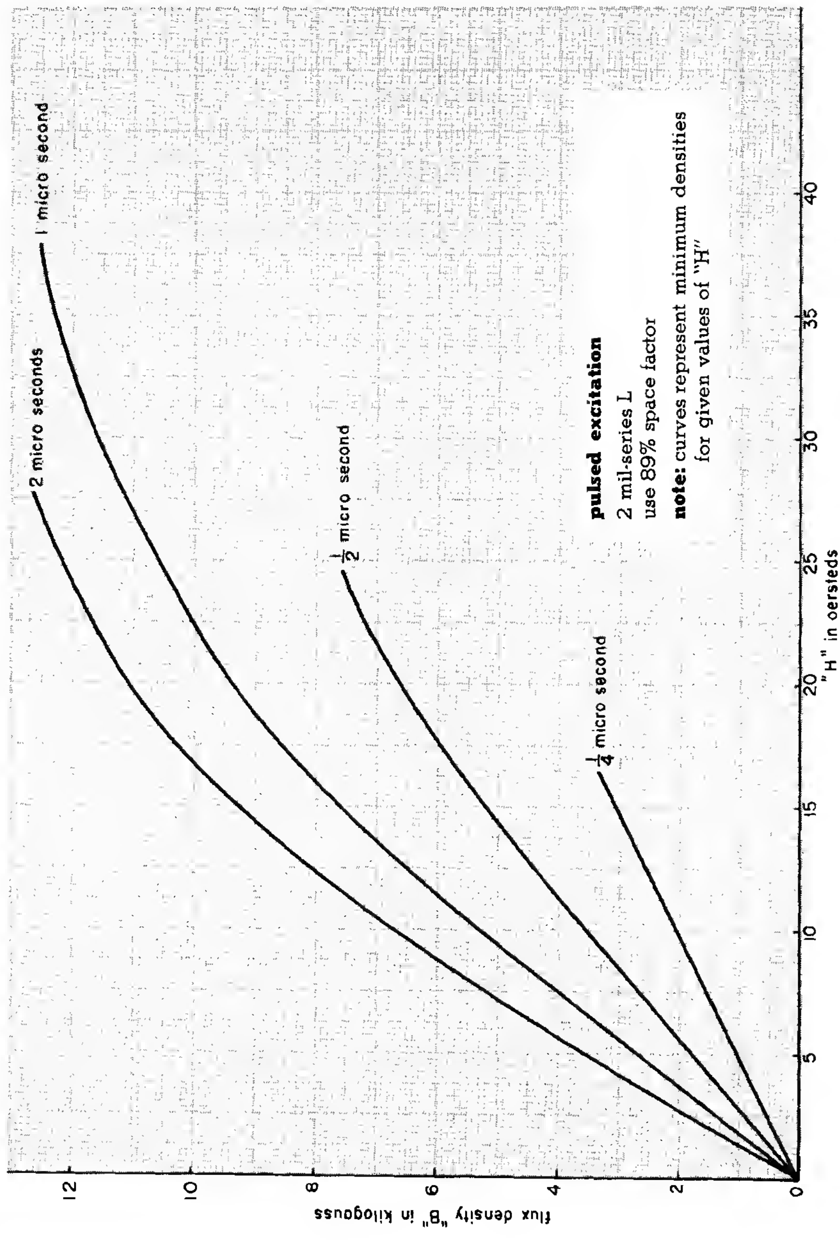


Figure 28 Pulsed core loss curve • single phase • 2 mil

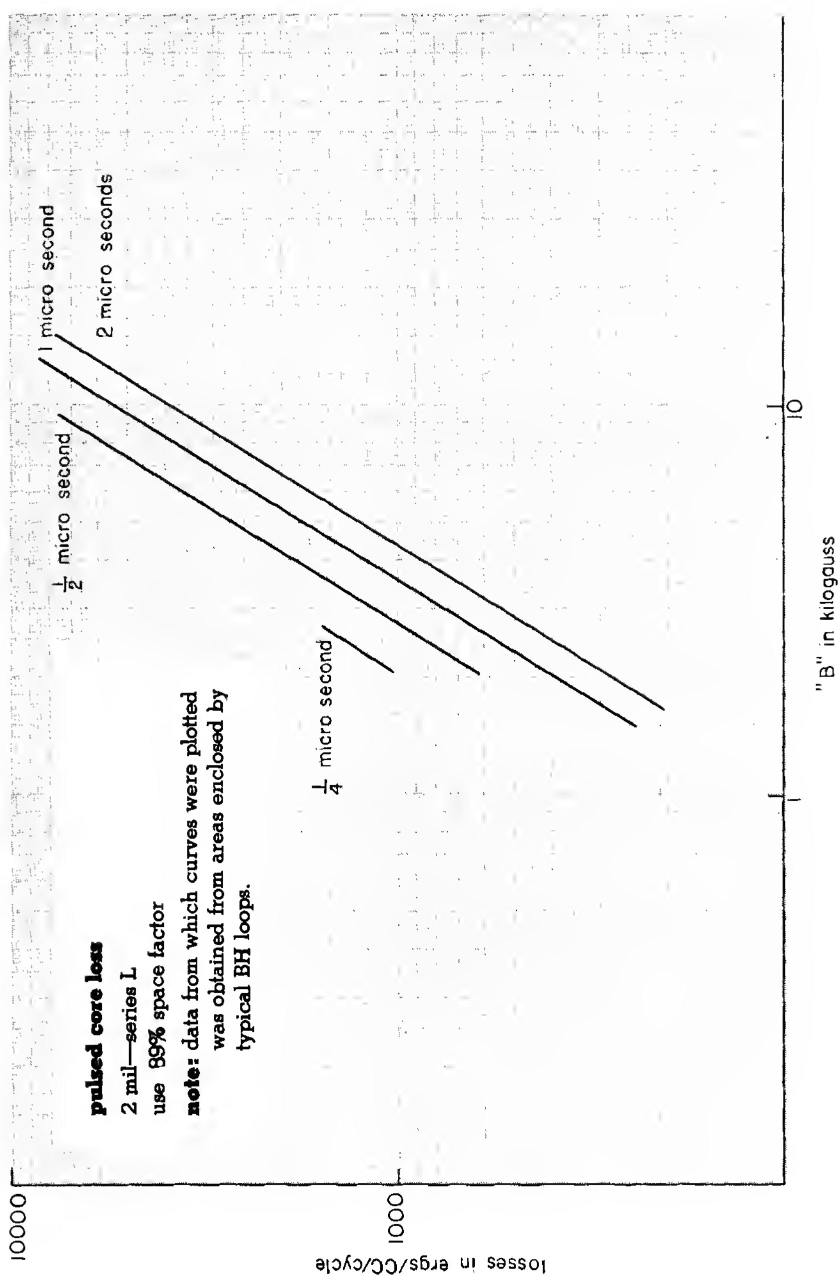


Figure 29 Incremental permeability • single phase • 1 and 2 mil

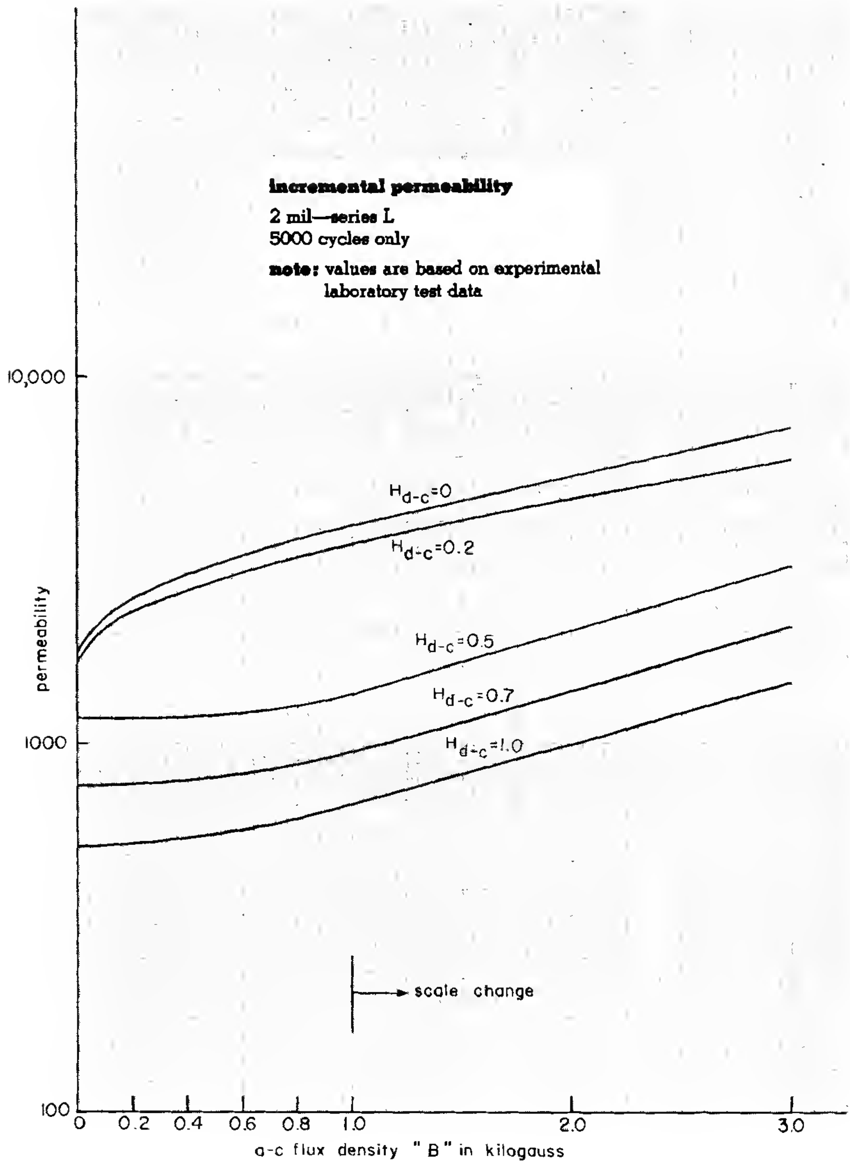
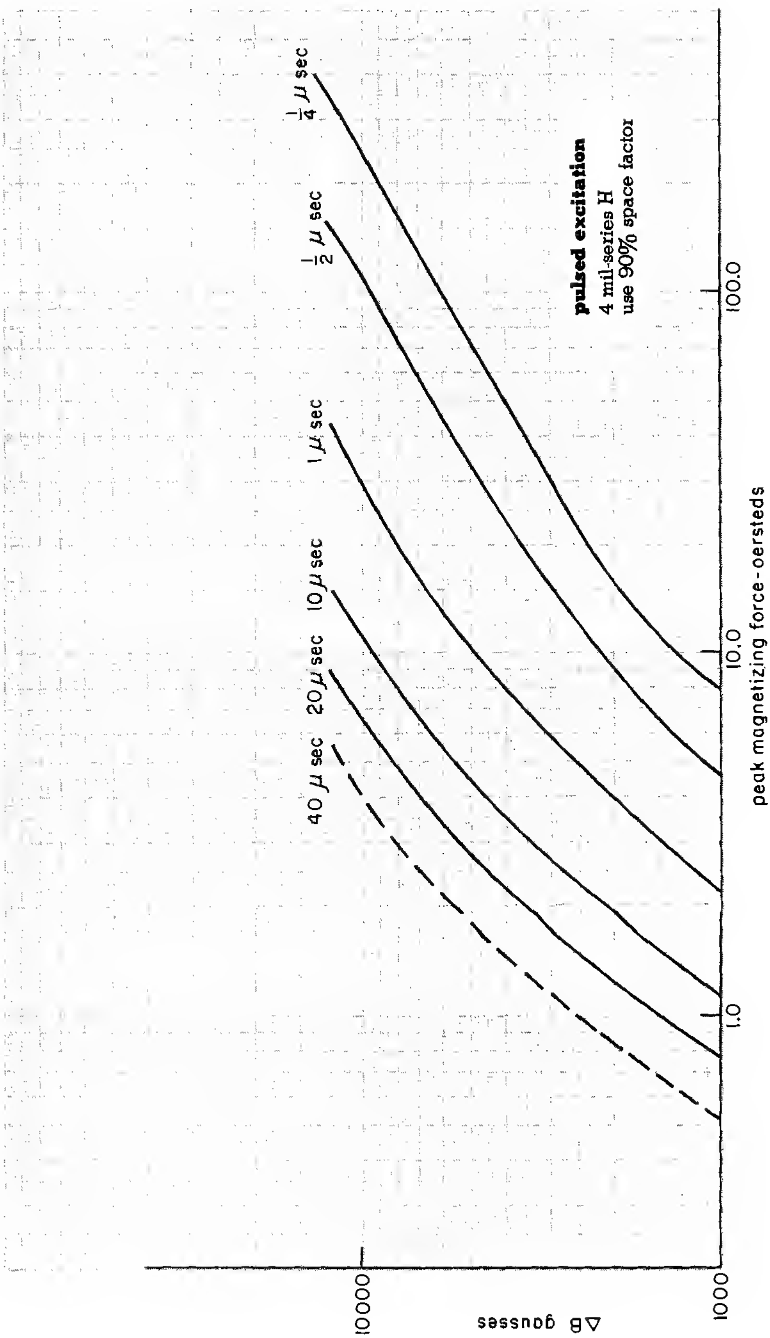


Figure 30 Pulsed excitation curve • 4 mil • Series H



# MECHANICAL TOLERANCES

The mechanical tolerances of ring, C and E cores are shown in technical data 46-760. For type C cores, these are as adopted by the Electronic Industries Association and specified in Standard RS-217.

# ASSEMBLY OF CORES WITH COILS

## Assembly of Small Cores

Place the coil over the bottom section/sections of the core carefully to avoid gouging the insulation of the coil tube. Although small cores usually do not require a joint compound treatment, joint surfaces should be cleaned with a dry paintbrush or dry compressed air before assembly.

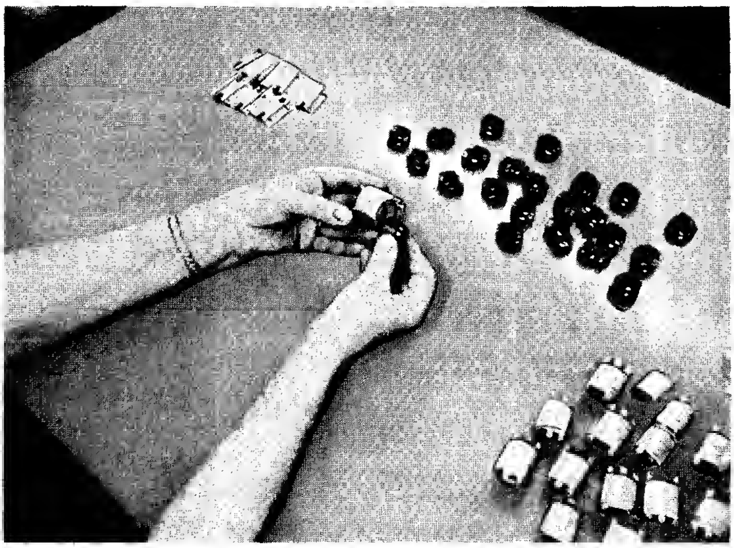


Figure 31 Core/coil assembly

## POSITIONING THE BRACKET AND CORE

Next, the mounting bracket is placed in position. The band is pulled around the bracket and under the core.

## ASSEMBLY OF UPPER CORE SECTION ON BOTTOM SECTION

The upper section is lined up with the catalog number marking on the core bottom section and is lowered into the coil with special care to insure that:

—the coil is not gouged

—no foreign material is carried into the joint.

For class F or H use, for 3 phase cores, or if noise is a problem, apply joint compound 1454 892 with an oil can (3-4 drops/sq. in.) to the bottom core half joint surfaces.

The upper section should be well-seated on the bottom section and in alignment with it.

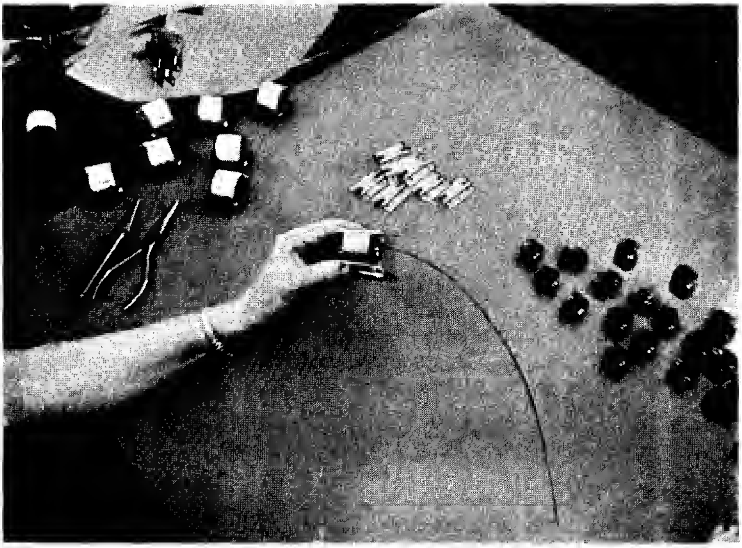


Figure 32 Bracket placed in position—band pulled around core and under bracket

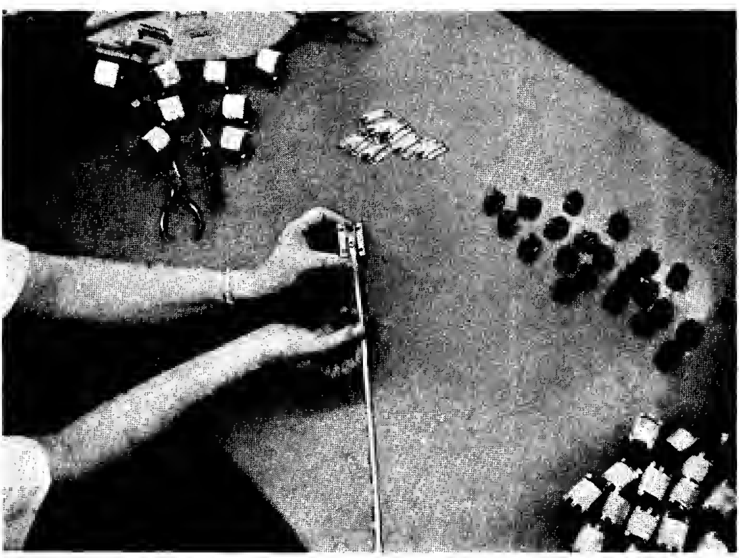


Figure 33 Seal on band—band pulled tight

## BANDING OF SMALL CORES

Table B (Page I-1) should next be consulted to determine the size and number of bands to be utilized, and the seal style number for the particular core to be banded. The band(s) are placed around the core and the seal slipped over the end of the band and the band is bent inward under the seal. The starting end should be long enough to extend around the corner of the core.

The free end of the band is inserted into the jaws of stretching tool style number 1263 732 and the band is pulled up snugly to the core.

The core sections are than aligned, and the bands located parallel to the edge of the core at all points.

## BAND SEAL AND CUTOFF

The band is now crimped, soldered or spot-welded to the seal with the banding tool in place. (In soldering operations, a minimum of rosin soldering fluid should be utilized. Solder consisting of 60% lead and 40% tin is recommended.)

After the seal is fastened, the banding tool is removed by pressing the release lever and excess banding is trimmed off by means of standard tin-snips.

## WEDGES OR FILLERS

If coil wedges or fillers are used between the core and the inside of the coil to provide uniform spacing or centering, they should be designed for only a moderately tight fit so that there will be no danger of preventing the core joint from closing.

## MOUNTING BRACKETS OR (FRAMES)

If the brackets are designed so that they extend around the edge of the core, insulation should be used so that laminations are not shorted together.

Also, the brackets should be so designed so that no force is transmitted to the core other than that developed by the band. High exciting current or high loss may be produced if these precautions are not observed.

note: Appendix A shows a series of mounting brackets that may be used for simple core-coil construction.

Lastly, the insulation between the core and the frame causes the core to "float" electrostatically. It is necessary, therefore, to ground the cores to the brackets through a metallic connection (usually a copper braid under the banding strap to the frame) to prevent static discharge.

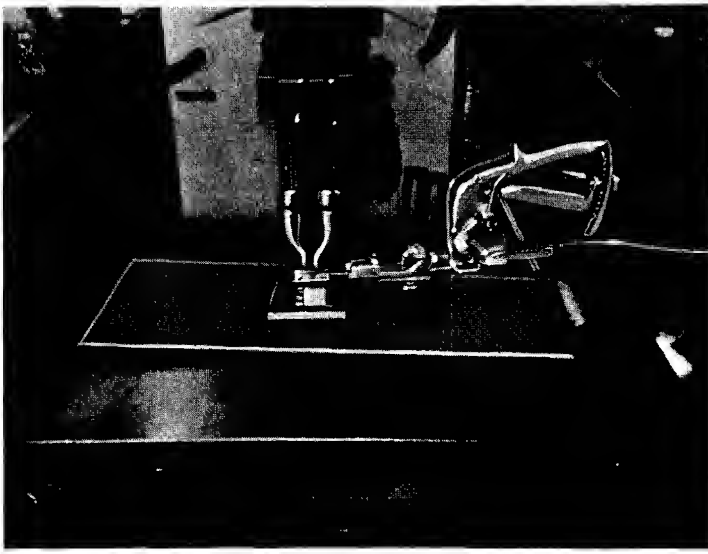


Figure 34 Band pulled tight with stretching tool—ready for spot welding

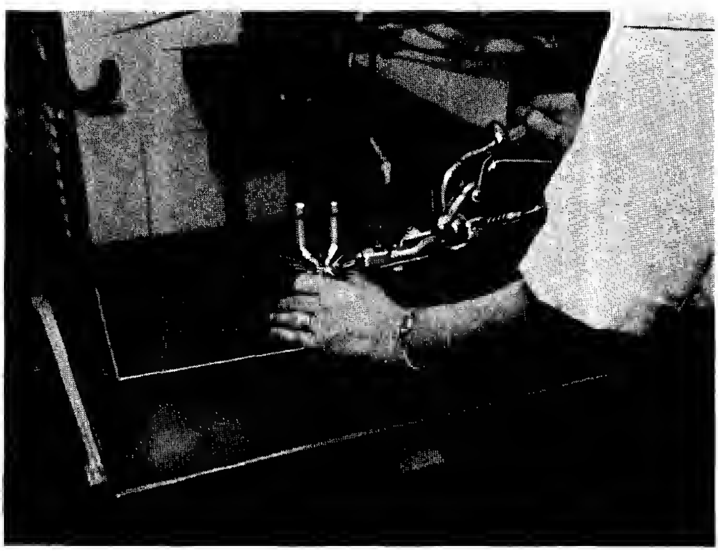


Figure 35 Spot welding—(note sparks)

## ASSEMBLY OF LARGE CORES (11 LBS AND OVER)

When assembling large type C cores, the same general procedures are followed as for small cores except that a larger band is used with ¾ inch, crimp-type seals.

Strip all protective material from the cores and remove any traces of adhesive residue with a clean rag dampened with acetone. If necessary, buff the joint surfaces lightly with a motor driven soft steel wire brush. Maintain brush rotation in the plane of the laminations.

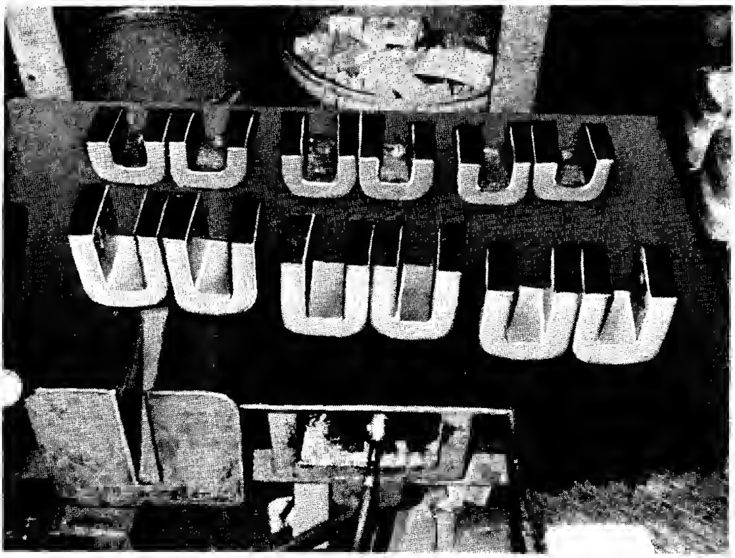


Figure 36 Cores laid out for assembly—bottom yoke insulation in place

Assemble the bottom core halves, coils, and any inter-core insulation. Check to be sure no foreign material is on the joint surfaces. Apply compound style number 1454 892 with an oil can (3-4 drops/sq. in.) to the bottom core half joint surfaces. Then lower the core caps into place, along with the top intercore spacers (when used). BE VERY CAREFUL NOT TO SCRAPE ANY FOREIGN MATERIAL INTO THE GAP DURING THIS OPERATION.

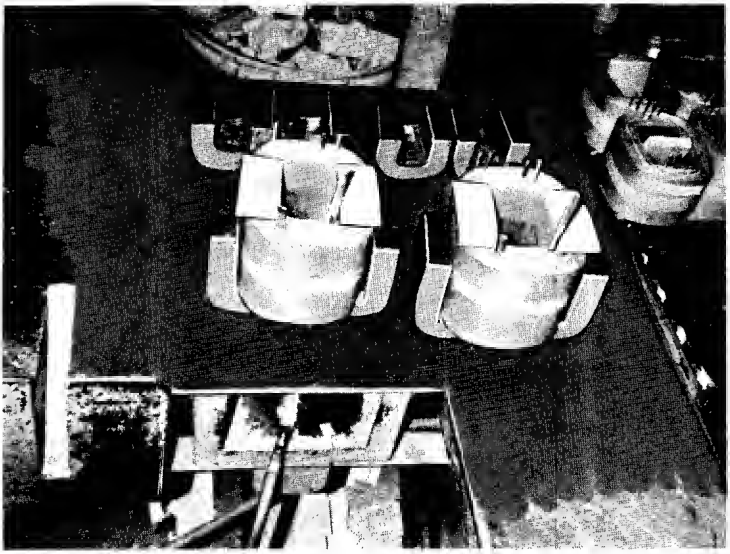


Figure 37 Coils lowered into place—top yoke insulation shown in position

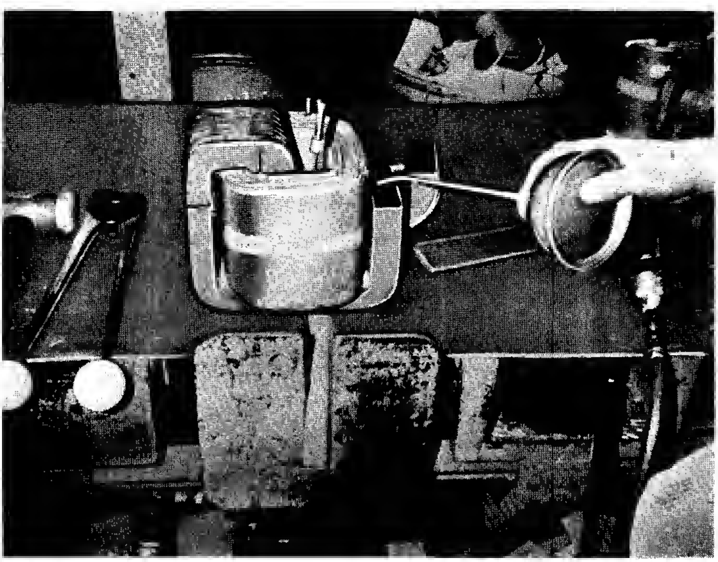


Figure 38 Applying joint compound

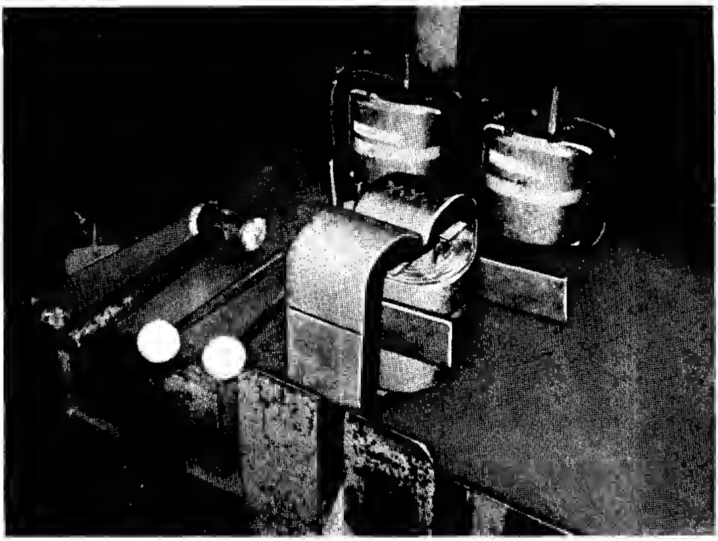


Figure 39 Core section in position—(wedges are to align core halves and will be withdrawn later)

Oscillate the halves to spread the compound and reduce joint thickness to a minimum; and band per next paragraph within five minutes after compound application. In most cases, this will necessitate assembling and banding one core at a time.

Place the required number of bands around each core, exercising care that they do not snag any laminations at the joint. Slide a seal on each band, with the pressed rib inside. Bend the lower end of the band back under the seal so this end reaches to at least 45° point of the core's corner radius when the seal is in position.

Set the air pressure for the Acme BID6 banding tool to the value marked on the calibration tag for the tension desired with the tool running idle. Slip the tool on the band and gradually pull up the latter by intermittently operating the air valve while tapping the core parts. Meanwhile, adjust the seal and band positions to secure proper register. Then pull the band to its rated tension by stalling the tool. The air valve must be left on while crimping the seal.

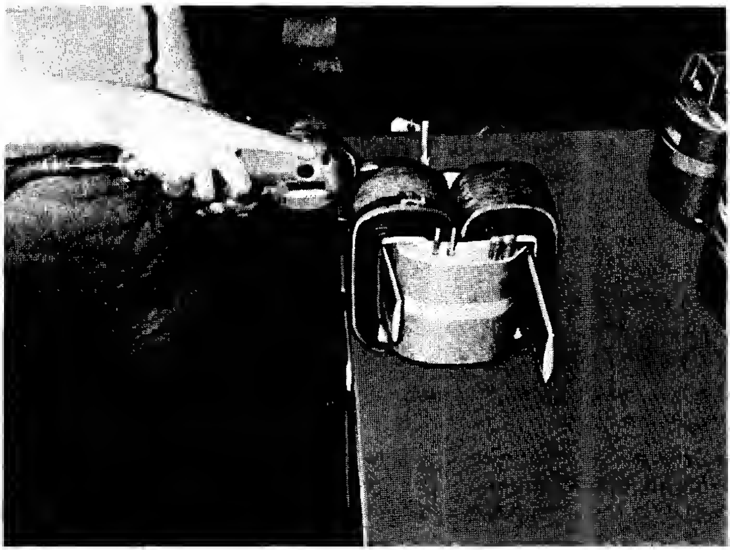


Figure 40 Application of bands—Acme B106 stretching tool in use

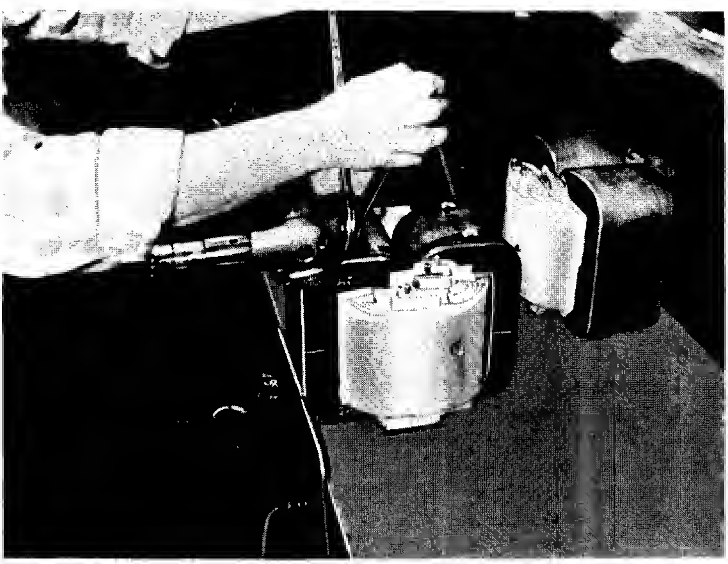


Figure 41 Seal being crimped

The loop end of the seal may be tapped with a mallet to flatten the band into good conformity with the seal. This arrests a tendency for the band to tear into the seal.

Keep the seals away from the core joint; and alternate them to prevent mutual interference. Adjacent bands should be at least ¼″ apart so the banding and crimping tools will not bear on any previously installed band.

Place the first band near the center of the core. Then tighten additional bands in order from this first band outward to the core edges.

Position the crimping tool squarely on the seal and operate it so minimum band lift occurs. Improper operation will result in a loose band.

Cut two crimps in each seal. The first should be nearer the nose of the banding tool. Tool wear and pressure will affect the depth of crimp; so periodic checks should be made to be sure the crimp marks cut through the seal and into the band.

Break off the band by elevating the rear of the banding tool while holding its nose firmly against the core.

The BID6 tool must be operated on clean, lubricated air. This may be provided by installing a filter, oiler, and regulator at each work station. Adjust the oiler so a slight deposit of oil is maintained around the tool vents. ASE-10 motor oil should be used.

Grease the rear bearing fitting once a week with #2 AGMA EP gear oil (Socony Gargoyle Compound AA or equivalent). Clean the rotary dog and pusher parts occasionally; and calibrate the tools on a regular basis (±10%).

The assembly should then be baked at 125-135°C and held at this temperature for three hours after reaching temperature.

If it becomes necessary to disassemble a core/coil assembly that contains baked joint compound, preferred technique is to heat the assembly to a temperature of 125°-135°C. Dismantle while the assembly is still hot, to minimize possible core damage.

If shop facilities are such that reheating is impractical, break the core joints by striking the core sides a sharp blow with a rawhide mallet. Clean all compound from the joint surfaces by wire brushing as in Section 1; and wipe these surfaces clean with an acetone dampened rag.

The following table may be used as a guide in determining the proper number of bands for a given core.

## TABLE I

| core dimensions (cross section in square inches—one leg) | band size | number | tension (pounds) |
|---|---|---|---|
| 3.0 to 4.25 | ¾″ x .035″ | 1 | 900 |
| 4.25 to 6.0 | ¾″ x .023″ | 2 | 600 |
| 6.0 to 9.0 | ¾″ x .023″ | 3 | 600 |
| 9.0 to 13.5 | ¾″ x .035″ | 3 | 900 |
| 13.5 to 18.0 | ¾″ x .035″ | 4 | 900 |

This table is based upon a recommended core pressure of 200-300 psi. For larger cores, add bands as necessary to maintain this range.

Certain cores of relatively narrow strip width may not accommodate sufficient bands to develop 200 psi. In such cases, the minimum pressure may be shaded to 150 psi. This should be regarded as an absolute minimum.

Cores with an extremely low D/E ratio may require special clamping arrangements.

**example:**

A core of 7½″ strip width and 5″ buildup is to be banded.

$7\frac{1}{2} \times 5 = 37\frac{1}{2}\ in^2 \times 200$ psi=7500 pounds

150 psi=5600 pounds

Normally, this core would require 9 bands (¾″ x .035″) pulled to 900 pounds each.

$9 \times 900 = 8100$ pounds

Common practice is to allow at least ¼″ spacing between bands; and the application of 9 bands is not considered feasible.

Seven bands will permit the required spacing; and their cumulative tension (7 x 900= 6300 pounds) is above the absolute minimum. Hence, seven bands can be used with this core for all but the most critical applications.

# CORE BANDING TECHNIQUE

## Table II. Determining the Size and Number of Bands

(Select band, seal and tension according to core size in this table)

| core dimensions (1 leg) | | banding strap | | seal | | banding tool | |
|---|---|---|---|---|---|---|---|
| cross section erea in sq. in. (D x E) | width of strip in core-inches | size in inches | no. used | style number | size in inches | style number | tension in pounds |
| .188 or less | any | 3/16 x .006⑤ | 1 | 1304 065 | 3/16 x 1/4 | 1263 732 | 37.5 |
| .188 to .375 | 3/8 or larger | 3/8 x .006④ | 1 | 1294 363 | 3/8 x 3/8 | 1263 732 | 75 |
| .375 to .75 | 3/8 to 1½ | 3/8 x .012③ | 1 | 1294 363 | 3/8 x 3/8 | 1263 732 | 150 |
| ................ | 1⅝ or larger | 3/8 x .006④ | 2 | 1294 363 | 3/8 x 3/8 | 1263 732 | 75 |
| .75 to 1.5 | ½ to 1⅛ | 3/8 x .012③ | 1 | 1294 363 | 3/8 x 3/8 | 1263 732 | 150 |
| ................ | 1¼ or larger | 3/8 x .012② | 2 | 1294 363 | 3/8 x 3/8 | 1263 732 | 150 |
| 1.5 to 3.0 | ¾ or larger | ¾ x .023① | 1 | 1293 783 | ⅞ x 1⅞ | Acme⑥ | 600 |
| 3.0 to 4.25 | ¾ or larger | ¾ x .035② | 1 | 1293 783 | ⅞ x 1⅞ | Acme | 900 |
| 4.25 to 6.0 | 2 or larger | ¾ x .023① | 2 | 1293 783 | ⅞ x 1⅞ | Acme | 600 |
| 6.0 to 9.0 | 3¼ or larger | ¾ x .023① | 3 | 1293 783 | ⅞ x 1⅞ | Acme | 600 |
| 9.0 to 13.5 | 3¼ or larger | ¾ x .035② | 3 | 1293 783 | ⅞ x 1⅞ | Acme | 900 |

joint compound—style number 1454 892 (1 quart)

① Style number 1629 485
② Style number 1629 486
③ Style number 1629 192
④ Style number 1629 191
⑤ Style number 1629 190
⑥ Air operated banding tool model B1D6 for ¾″ strap may be obtained from:

Acme Steel Products
2840 Archer Ave.,
Chicago 8, Illinois

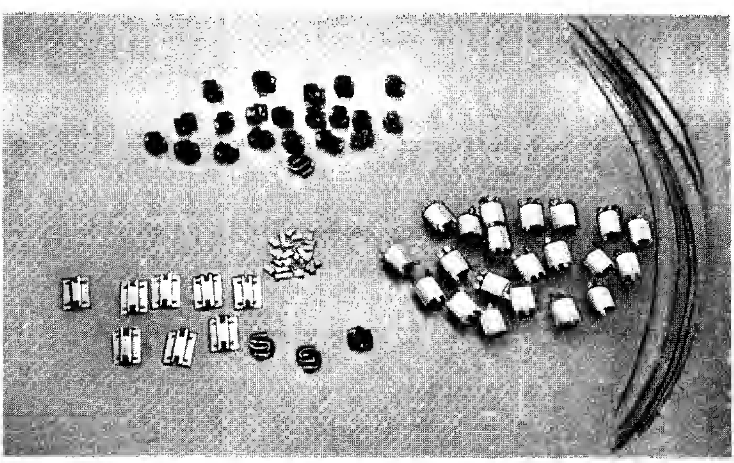


Figure 42 Cores, seals, mounting brackets, coils and bands laid out for assembly

## **Banding Tool** (Style Number 1263 732)

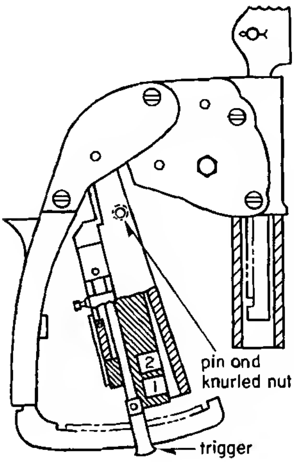



Figure 43 Banding tool, 150 pounds pressure used for smaller cores

The band stretching tool is shipped adjusted for 150 pounds of pressure. In operation, the nose of the tool is placed against the band seal, with the band running between the fixed and hinged portions of the nose and on back between the small platform and the dog on the side of the tool toward the reel. The handle is squeezed upward and allowed to drop. When the pre-set tool pressure is reached, the latch is tripped, preventing further tightening of the band. Specific pressures required for banding are as follows:

| **pressure** | **hole #1** | **hole #2** |
|---|---|---|
| 37½ pounds | bright spring | black spring |
| 75 pounds | bright spring on foot | black spring on foot |
| 150 pounds | bright spring on foot | bright spring on foot |

To change tripping pressure, all that is necessary is to:

—remove knurled nut from pin through the handle

—withdraw pin

—open handle and arrange the springs in accordance with the above outline.

Check calibration of banding tools frequently.

# APPENDIX A

## Mounting Brackets

Spot-Weld Cradle and Base Together
(with E = number of spots)

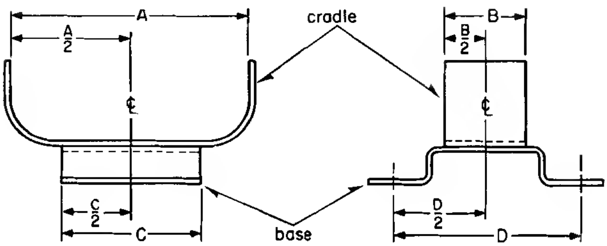



Figure 44

| group | dimensions in inches | | | | E (no. of spots) | core reference |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| 1 | 1 9/16 | 1/2 | 15/16 | 1 1/4 | 2 | Z-98 |
| 2 | 1 5/8 | 5/8 | 15/16 | 1 7/16 | 2 | Z-99 |

Spot-Weld Cradle and Base Together
(with E = number of spots)

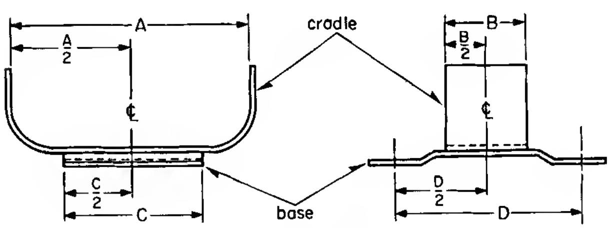



Figure 45

| group | dimensions in inches | | | | E (no. of spots) | core reference |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| 15 | 1 9/16 | 1/2 | 15/16 | 1 1/4 | 2 | Z-98 |
| 16 | 1 5/8 | 5/8 | 15/16 | 1 7/16 | 2 | Z-99 |

Spot-Weld Cradle and Base Together
(with E = number of spots)

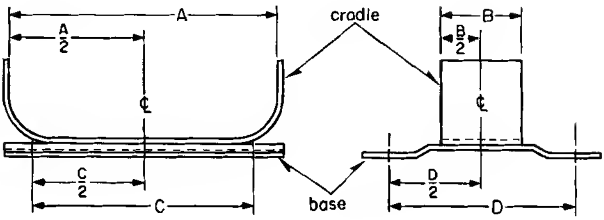



Figure 46

| group | dimensions in inches | | | | E (no. of spots) | core reference |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| 3 | 1 13/16 | 5/8 | 1 11/16 | 1 7/16 | 2 | Z-100 |
| 4 | 2 3/8 | 3/4 | 2 1/8 | 1 3/4 | 2 | Z-101 |
| 5 | 2 1/2 | 3/4 | 2 1/8 | 1 3/4 | 2 | Z-102 |
| 6 | 2 9/16 | 7/8 | 2 19/64 | 2 55/64 | 2 | Z-103 |
| 7 | 2 13/16 | 7/8 | 2 5/8 | 2 1/8 | 4 | Z-104 |
| 8 | 2 15/16 | 1 | 2 5/8 | 2 1/8 | 4 | Z-105 |
| 9 | 3 5/8 | 1 | 3 | 2 7/16 | 5 | Z-106 |
| 10 | 3 7/16 | 1 1/8 | 3 | 2 7/16 | 5 | Z-107 |
| 11 | 4 1/16 | 1 1/4 | 3 5/16 | 2 11/16 | 5 | Z-108 |
| 12 | 4 13/16 | 1 1/4 | 3 11/16 | 3 | 5 | H-499 |
| 13 | 4 1/16 | 1 1/2 | 3 | 2 7/16 | 5 | H-500 |
| 14 | 5 1/16 | 1 1/2 | 3 11/16 | 3 | 5 | H-501 |

Spot-Weld Cradle and Base Together
(with E = number of spots)

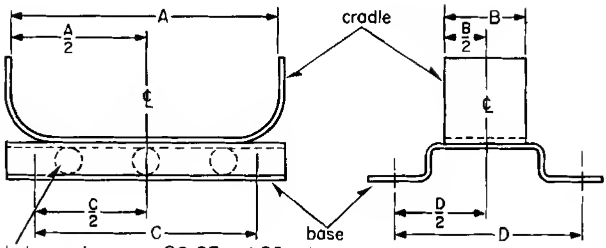



Figure 47

| group | dimensions in inches | | | | E (no. of spots) | core reference |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| 17 | 1 13/16 | 5/8 | 1 11/16 | 1 7/16 | 2 | Z-100 |
| 18 | 2 3/8 | 3/4 | 2 1/8 | 1 3/4 | 2 | Z-101 |
| 19 | 2 1/2 | 3/4 | 2 1/8 | 1 3/4 | 2 | Z-102 |
| 20 | 2 9/16 | 7/8 | 2 19/64 | 1 55/64 | 2 | Z-103 |
| 21 | 2 13/16 | 7/8 | 2 5/8 | 2 1/8 | 4 | Z-104 |
| 22 | 2 15/16 | 1 | 2 5/8 | 2 1/8 | 4 | Z-105 |
| 23 | 3 5/8 | 1 | 3 | 2 7/16 | 5 | Z-106 |
| 24 | 3 7/16 | 1 1/8 | 3 | 2 7/16 | 5 | Z-107 |
| 25 | 4 1/16 | 1 1/4 | 3 5/16 | 2 11/16 | 5 | Z-108 |
| 26 | 4 13/16 | 1 1/4 | 3 11/16 | 3 | 5 | H-499 |
| 27 | 4 1/16 | 1 1/2 | 3 | 2 7/16 | 5 | H-500 |
| 28 | 5 1/16 | 1 1/2 | 3 11/16 | 3 | 5 | H-501 |

# APPENDIX B

## Core Listing

by relative power handling capacity

April 15, 1965

Pg 6

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **12 mil series A** | | | | | | |
| **A-52** | 3/8 | 3/16 | 7/8 | 1 1/4 | .078 | .086 |
| **A-424** | 5/8 | 1/4 | 3/8 | 1 3/8 | .081 | .171 |
| **✤A-1** | 5/8 | 1/4 | 1/2 | 1 1/8 | .088 | .161 |
| **A-889** | 7/8 | 1/4 | 5/16 | 1 5/16 | .089 | .224 |
| **A-210** | 3/8 | 1/4 | 5/8 | 1 9/16 | .092 | .127 |
| **✤A-2** | 3/4 | 1/4 | 1/2 | 1 1/8 | .106 | .193 |
| **A-252** | 5/8 | 5/16 | 1/2 | 1 1/8 | .11 | .21 |
| **A-231** | 3/4 | 5/16 | 1/2 | 1 | .117 | .236 |
| **A-373** | 3/4 | 9/32 | 7/16 | 1 3/8 | .127 | .225 |
| **A-335** | 3/4 | 9/32 | 9/16 | 1 1/8 | .134 | .229 |
| **A-584** | 1 | 5/16 | 1/2 | 1 | .156 | .317 |
| **A-232** | 7/8 | 3/8 | 1/2 | 1 | .164 | .35 |
| **✤A-4** | 3/4 | 3/8 | 7/16 | 1 3/8 | .169 | .324 |
| **A-325** | 5/8 | 9/32 | 5/8 | 1 9/16 | .172 | .238 |
| **A-479** | 1 | 1/4 | 11/16 | 1 | .172 | .266 |
| **A-327** | 3/4 | 5/16 | 1/2 | 1 9/16 | .183 | .306 |
| **A-279** | 5/8 | 1/2 | 7/16 | 1 3/8 | .188 | .376 |
| **A-57** | 5/8 | 5/16 | 5/8 | 1 9/16 | .191 | .268 |
| **A-669** | 7/8 | 7/16 | 1/2 | 1 1/8 | .215 | .452 |
| **A-463** | 3/4 | 5/16 | 5/8 | 1 9/16 | .228 | .322 |
| **A-207** | 5/8 | 5/16 | 5/8 | 1 15/16 | .236 | .306 |
| **A-280** | 5/8 | 1/2 | 5/8 | 1 1/4 | .245 | .427 |
| **A-250** | 1 1/4 | 1/4 | 3/8 | 2 1/4 | .263 | .477 |
| **A-853** | 1 | 7/16 | 1/2 | 1 1/4 | .273 | .543 |
| **A-141** | 1 | 9/32 | 5/8 | 1 9/16 | .275 | .382 |
| **A-605** | 1 | 1/2 | 1/2 | 1 1/8 | .281 | .617 |
| **✤A-3** | 1 | 3/8 | 1/2 | 1 9/16 | .294 | .514 |
| **✤A-434** | 3/4 | 1/2 | 1/2 | 1 9/16 | .294 | .547 |
| **A-128** | 1 1/8 | 7/16 | 7/16 | 1 3/8 | .296 | .59 |
| **✤A-5** | 1 | 5/16 | 5/8 | 1 9/16 | .305 | .43 |
| **A-349** | 7/8 | 11/32 | 5/8 | 1 11/16 | .317 | .44 |
| **A-776** | 1 1/8 | 7/16 | 1/2 | 1 5/16 | .323 | .63 |
| **A-243** | 1 | 1/2 | 1/2 | 1 5/16 | .328 | .665 |
| **A-87** | 1 | 7/16 | 1/2 | 1 9/16 | .342 | .62 |
| **A-395** | 1 | 1/2 | 7/16 | 1 9/16 | .342 | .716 |
| **A-746** | 3/4 | 1/2 | 5/8 | 1 9/16 | .366 | .583 |
| **A-415** | 1 | 5/16 | 5/8 | 1 15/16 | .378 | .492 |
| **A-24** | 1 | 1/2 | 1/2 | 1 9/16 | .391 | .732 |
| **A-341** | 1 | 15/32 | 1/2 | 1 3/4 | .411 | .72 |
| **A-432** | 3/4 | 7/16 | 3/4 | 1 13/16 | .446 | .55 |
| **✤A-7** | 1 | 3/8 | 5/8 | 1 15/16 | .453 | .613 |
| **A-831** | 3/4 | 5/8 | 5/8 | 1 9/16 | .458 | .754 |
| **A-774** | 1 1/8 | 1/2 | 5/8 | 1 5/16 | .462 | .786 |
| **A-712** | 1 1/4 | 7/16 | 5/8 | 1 3/8 | .469 | .748 |
| **A-376** | 1 | 7/16 | 5/8 | 1 3/4 | .478 | .693 |
| **✤A-81** | 1 | 1/2 | 5/8 | 1 9/16 | .489 | .765 |
| **✤A-747** | 1 1/2 | 1/2 | 7/16 | 1 9/16 | .512 | 1.07 |
| **A-25** | 1 1/4 | 3/8 | 11/16 | 1 5/8 | .525 | .70 |
| **A-225** | 1 | 1/2 | 5/8 | 1 11/16 | .528 | .797 |
| **✤A-163** | 1 | 7/16 | 5/8 | 1 15/16 | .529 | .735 |
| **12 mil series A** | | | | | | |
| **A-399** | 1 1/4 | 1/2 | 1/2 | 1 3/4 | .548 | .976 |
| **A-205** | 1 1/2 | 3/8 | 5/8 | 1 9/16 | .55 | .805 |
| **A-416** | 3/4 | 3/4 | 5/8 | 1 9/16 | .55 | .981 |
| **✤A-583** | 1 1/8 | 1/2 | 5/8 | 1 9/16 | .55 | .858 |
| **A-626** | 2 | 1/2 | 1/2 | 1 1/8 | .563 | 1.24 |
| **✤A-8** | 1 1/4 | 3/8 | 5/8 | 1 15/16 | .568 | .761 |
| **A-713** | 1 3/8 | 7/16 | 5/8 | 1 9/16 | .587 | .888 |
| **A-358** | 7/8 | 7/16 | 5/8 | 2 1/2 | .598 | .742 |
| **✤A-6** | 1 | 5/8 | 5/8 | 1 9/16 | .611 | 1.02 |
| **A-375** | 1 | 1/2 | 1/2 | 2 1/2 | .625 | .964 |
| **A-227** | 1 | 5/8 | 5/8 | 1 5/8 | .635 | 1.125 |
| **✤A-758** | 1 1/2 | 5/8 | 7/16 | 1 9/16 | .64 | 1.43 |
| **A-80** | 1 | 17/32 | 5/8 | 1 15/16 | .643 | .932 |
| **A-374** | 1 | 3/8 | 3/4 | 2 5/16 | .65 | .695 |
| **A-168** | 1 | 5/8 | 5/8 | 1 11/16 | .66 | 1.06 |
| **✤A-326** | 3/4 | 5/8 | 5/8 | 2 1/2 | .66 | .866 |
| **A-354** | 1 | 11/16 | 5/8 | 1 9/16 | .672 | 1.16 |
| **A-118** | 5/8 | 5/8 | 3/4 | 2 5/16 | .677 | .803 |
| **A-114** | 1 1/2 | 3/8 | 5/8 | 1 15/16 | .682 | .915 |
| **A-129** | 3/4 | 3/4 | 5/8 | 1 15/16 | .682 | 1.09 |
| **A-69** | 1 | 5/8 | 5/8 | 1 3/4 | .684 | 1.083 |
| **A-406** | 5/8 | 5/8 | 15/16 | 1 7/8 | .686 | .766 |
| **A-260** | 5/8 | 1/2 | 1 | 2 1/4 | .704 | .644 |
| **A-60** | 1 | 13/32 | 3/4 | 2 5/16 | .705 | .768 |
| **A-242** | 1 1/4 | 15/32 | 5/8 | 1 15/16 | .709 | .998 |
| **A-261** | 1 1/8 | 9/16 | 5/8 | 2 | .71 | 1.125 |
| **A-596** | 1 1/4 | 3/8 | 5/8 | 2 1/2 | .733 | .887 |
| **A-726** | 7/8 | 5/8 | 3/4 | 1 13/16 | .743 | 1.00 |
| **A-148** | 1 1/2 | 3/8 | 11/16 | 1 15/16 | .75 | .936 |
| **✤A-9** | 1 1/4 | 1/2 | 5/8 | 1 15/16 | .757 | 1.08 |
| **✤A-161** | 1 | 7/16 | 3/4 | 2 5/16 | .758 | .838 |
| **A-494** | 1 1/4 | 5/8 | 5/8 | 1 8/16 | .762 | 1.27 |
| **A-200** | 7/8 | 3/8 | 15/16 | 2 1/2 | .768 | .674 |
| **A-458** | 1 3/8 | 11/32 | 13/16 | 2 | .768 | .804 |
| **A-312** | 1 1/8 | 7/16 | 5/8 | 2 1/2 | .77 | .956 |
| **A-85** | 1 | 3/8 | 1 3/16 | 1 3/4 | .781 | .68 |
| **A-321** | 1 3/8 | 15/32 | 9/16 | 2 3/16 | .792 | 1.14 |
| **A-402** | 1 1/8 | 1/2 | 1/2 | 2 13/16 | .793 | 1.176 |
| **A-271** | 1 1/2 | 7/16 | 5/8 | 1 15/16 | .794 | 1.10 |
| **✤A-10** | 1 1/4 | 3/8 | 3/4 | 2 5/16 | .814 | .871 |
| **A-702** | 1 1/2 | 8/16 | 5/8 | 1 9/16 | .823 | 1.34 |
| **A-470** | 1 | 11/16 | 5/8 | 1 15/16 | .833 | 1.293 |
| **A-314** | 1 3/8 | 5/8 | 5/8 | 1 9/16 | .839 | 1.40 |
| **A-45** | 1 1/8 | 5/8 | 5/8 | 1 15/16 | .85 | 1.284 |
| **A-50** | 1 | 17/32 | 1 | 1 5/8 | .863 | .947 |
| **A-195** | 1 | 1/2 | 3/4 | 2 5/16 | .867 | .98 |
| **A-256** | 1 | 1/2 | 3/4 | 2 5/16 | .867 | .98 |
| **A-714** | 1 1/2 | 1/2 | 11/16 | 1 11/16 | .871 | 1.00 |
| **A-295** | 1 1/4 | 9/16 | 5/8 | 2 | .878 | 1.27 |
| **A-785** | 1 5/16 | 7/16 | 3/4 | 2 1/16 | .887 | 1.03 |

✤ **preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 12 mil series A

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-193 | 1 1/2 | 9/16 | 5/8 | 1 11/16 | .89 | 1.39 |
| A-328 | 1 | 9/16 | 7/8 | 1 13/16 | .892 | 1.04 |
| +A-32 | 1 | 3/4 | 5/8 | 1 15/16 | .908 | 1.453 |
| A-206 | 2 | 3/8 | 5/8 | 1 15/16 | .908 | 1.22 |
| A-654 | 1 1/8 | 3/4 | 5/8 | 1 3/4 | .924 | 1.55 |
| A-342 | 1 1/2 | 7/16 | 11/16 | 2 1/16 | .93 | 1.15 |
| A-359 | 1 1/8 | 17/32 | 5/8 | 2 1/2 | .933 | 1.21 |
| A-770 | 1 1/2 | 1/2 | 1/2 | 2 1/2 | .938 | 1.37 |
| A-126 | 1 1/4 | 5/8 | 5/8 | 1 5/16 | .945 | 1.43 |
| A-59 | 1 1/8 | 1/2 | 3/4 | 2 1/4 | .95 | 1.08 |
| A-64 | 1 1/8 | 1/2 | 3/4 | 2 5/16 | .976 | 1.109 |
| A-170 | 1 1/4 | 1/2 | 5/8 | 2 1/2 | .978 | 1.25 |
| +A-454 | 1 1/2 | 9/16 | 5/8 | 1 15/16 | 1.021 | 1.50 |
| A-703 | 1 5/8 | 5/8 | 5/8 | 1 5/8 | 1.032 | 1.69 |
| A-313 | 1 1/4 | 17/32 | 5/8 | 2 1/2 | 1.038 | 1.342 |
| A-455 | 2 | 7/16 | 5/8 | 1 15/16 | 1.058 | 1.467 |
| A-493 | 1 1/4 | 5/8 | 3/4 | 1 13/16 | 1.062 | 1.43 |
| A-194 | 1 1/4 | 9/16 | 5/8 | 2 7/16 | 1.07 | 1.41 |
| A-310 | 1 | 5/8 | 3/4 | 2 5/16 | 1.084 | 1.36 |
| A-701 | 1 1/4 | 1/2 | 3/4 | 2 5/16 | 1.084 | 1.23 |
| A-1125 | 1 1/4 | 1/2 | 1/2 | 3 1/2 | 1.09 | 1.55 |
| A-272 | 1 1/4 | 9/16 | 5/8 | 2 1/2 | 1.098 | 1.44 |
| A-656 | 2 1/4 | 1/2 | 5/8 | 1 9/16 | 1.098 | 1.721 |
| A-379 | 1 | 17/32 | 1 3/16 | 1 3/4 | 1.104 | 1.032 |
| A-136 | 1/2 | 1/2 | 1 1/4 | 3 5/8 | 1.135 | .728 |
| A-392 | 7/8 | 9/16 | 15/16 | 2 1/2 | 1.153 | 1.088 |
| A-42 | 1 1/4 | 25/32 | 5/8 | 1 15/16 | 1.182 | 1.915 |
| A-90 | 1 3/8 | 17/32 | 1 | 1 5/8 | 1.186 | 1.30 |
| A-121 | 1 3/8 | 17/32 | 13/16 | 2 | 1.186 | 1.375 |
| A-286 | 1 1/2 | 9/16 | 1 5/8 | 7/8 | 1.199 | 1.476 |
| +A-257 | 2 | 1/2 | 5/8 | 1 15/16 | 1.211 | 1.725 |
| A-394 | 1 3/8 | 1/2 | 11/16 | 2 9/16 | 1.212 | 1.415 |
| A-175 | 1 1/4 | 11/16 | 11/16 | 2 1/16 | 1.221 | 1.67 |
| A-41 | 1 1/8 | 1/2 | 3/4 | 2 15/16 | 1.239 | 1.28 |
| A-400 | 1 1/4 | 9/16 | 11/16 | 2 9/16 | 1.24 | 1.483 |
| A-715 | 1 5/8 | 9/16 | 3/4 | 1 13/16 | 1.241 | 1.62 |
| A-727 | 1 | 5/8 | 7/8 | 2 5/16 | 1.265 | 1.33 |
| A-262 | 3/4 | 3/4 | 3/4 | 3 | 1.266 | 1.421 |
| A-360 | 1 1/4 | 5/8 | 5/8 | 2 5/8 | 1.281 | 1.67 |
| A-348 | 1 3/4 | 5/8 | 5/8 | 1 7/8 | 1.283 | 1.96 |
| +A-86 | 1 | 3/4 | 3/4 | 2 5/16 | 1.302 | 1.63 |
| +A-11 | 1 1/2 | 3/8 | 15/16 | 2 1/2 | 1.32 | 1.16 |
| A-803 | 1 1/2 | 9/16 | 5/8 | 2 1/2 | 1.32 | 1.74 |
| A-123 | 3/4 | 3/4 | 15/16 | 2 1/2 | 1.32 | 1.335 |
| A-146 | 1 1/6 | 1/2 | 15/16 | 2 1/2 | 1.32 | 1.22 |
| A-609 | 1 3/4 | 5/8 | 5/8 | 1 15/16 | 1.325 | 2.00 |
| +A-405 | 2 | 1/2 | 11/16 | 1 15/16 | 1.333 | 1.76 |
| +A-760 | 1 1/2 | 1 | 3/4 | 1 3/16 | 1.337 | 2.66 |
| A-275 | 1 3/8 | 9/16 | 11/16 | 2 9/16 | 1.363 | 1.63 |
| A-436 | 1 1/4 | 7/8 | 5/8 | 2 | 1.368 | 2.26 |
| A-440 | 1 1/4 | 1/2 | 5/8 | 3 1/2 | 1.369 | 1.57 |
| A-263 | 1 5/8 | 1/2 | 3/4 | 2 5/16 | 1.41 | 1.593 |
| A-1076 | 2 | 3/8 | 1 | 1 7/8 | 1.41 | 1.34 |
| A-61 | 1/2 | 11/16 | 1 3/8 | 3 | 1.419 | .962 |
| A-320 | 1 5/8 | 5/8 | 5/8 | 2 1/4 | 1.429 | 1.99 |
| A-631 | 1 1/4 | 7/8 | 11/16 | 1 15/16 | 1.459 | 2.26 |
| A-704 | 1 3/4 | 11/16 | 5/8 | 1 15/16 | 1.459 | 2.26 |
| A-322 | 1 1/8 | 3/4 | 3/4 | 2 5/16 | 1.463 | 1.83 |
| +A-138 | 1 1/4 | 1/2 | 15/16 | 2 1/2 | 1.465 | 1.35 |
| A-769 | 2 | 3/4 | 5/8 | 1 9/16 | 1.465 | 1.57 |
| A-315 | 1 5/8 | 11/16 | 11/16 | 1 15/16 | 1.49 | 2.14 |
| A-191 | 1 | 1/2 | 1 1/2 | 2 | 1.50 | 1.11 |
| A-336 | 1 3/4 | 1/2 | 3/4 | 2 5/16 | 1.517 | 1.72 |
| A-277 | 1 1/4 | 9/16 | 5/8 | 3 1/2 | 1.537 | 1.80 |
| A-644 | 1 3/4 | 9/16 | 5/8 | 2 1/2 | 1.538 | 2.01 |
| +A-17 | 1 | 3/4 | 1 3/16 | 1 3/4 | 1.559 | 1.60 |
| A-180 | 2 | 3/8 | 1 3/16 | 1 3/4 | 1.559 | 1.368 |
| A-398 | 1 1/4 | 5/8 | 1/2 | 4 | 1.564 | 2.199 |
| A-352 | 3/4 | 1 1/8 | 1 1/2 | 1 1/4 | 1.583 | 2.855 |
| +A-28 | 1 1/2 | 5/8 | 3/4 | 2 5/16 | 1.628 | 1.94 |
| A-125 | 1 1/4 | 3/4 | 3/4 | 2 5/16 | 1.628 | 2.035 |
| A-370 | 1 5/8 | 5/8 | 5/8 | 2 5/8 | 1.667 | 2.20 |
| A-422 | 1 1/8 | 1 | 1 | 1 1/2 | 1.688 | 2.37 |
| A-95 | 3/4 | 3/4 | 1 | 3 | 1.689 | 1.50 |
| A-886 | 1 3/4 | 5/8 | 5/8 | 2 1/2 | 1.70 | 2.31 |
| A-164 | 1 1/2 | 15/16 | 5/8 | 1 15/16 | 1.703 | 2.93 |
| A-291 | 1 | 1 23/32 | 2 | 1/2 | 1.719 | 4.63 |
| A-716 | 1 3/4 | 5/8 | 13/16 | 1 15/16 | 1.72 | 2.09 |
| A-382 | 7/6 | 9/16 | 1 | 3 1/2 | 1.722 | 1.36 |
| A-278 | 1 1/2 | 9/16 | 11/16 | 3 | 1.74 | 1.97 |
| +A-12 | 1 1/2 | 1/2 | 15/16 | 2 1/2 | 1.758 | 1.62 |
| A-174 | 1 1/4 | 5/8 | 3/4 | 3 | 1.758 | 1.89 |
| A-728 | 1 | 11/16 | 1 | 2 9/16 | 1.763 | 1.632 |
| A-483 | 1 1/2 | 11/16 | 3/4 | 2 5/16 | 1.789 | 2.18 |
| A-450 | 1 1/2 | 3/4 | 3/4 | 2 1/8 | 1.794 | 2.33 |
| A-833 | 2 | 3/4 | 5/8 | 1 15/16 | 1.82 | 2.86 |
| A-176 | 1 1/4 | 1/2 | 1 | 3 | 1.875 | 1.535 |
| A-410 | 1 3/8 | 5/8 | 3/4 | 2 15/16 | 1.891 | 2.05 |
| A-293 | 1 3/4 | 5/8 | 3/4 | 2 5/16 | 1.898 | 2.25 |
| A-307 | 1 3/8 | 11/16 | 7/8 | 2 5/16 | 1.914 | 2.065 |
| A-357 | 1 3/4 | 5/8 | 1 | 1 3/4 | 1.915 | 2.10 |
| A-438 | 1 1/4 | 1 | 3/4 | 2 1/16 | 1.934 | 2.80 |
| A-425 | 2 | 9/16 | 3/4 | 2 5/16 | 1.949 | 2.27 |
| +A-36 | 1 1/2 | 3/4 | 3/4 | 2 5/16 | 1.951 | 2.44 |
| A-361 | 1 3/8 | 11/16 | 11/16 | 3 | 1.953 | 2.31 |
| A-442 | 7/8 | 9/16 | 1 | 4 | 1.968 | 1.49 |
| A-482 | 1 1/2 | 9/16 | 15/16 | 2 1/2 | 1.975 | 1.86 |
| A-639 | 1 3/8 | 15/16 | 3/4 | 2 1/8 | 2.053 | 2.86 |
| A-238 | 1 5/8 | 5/8 | 7/8 | 2 5/16 | 2.055 | 2.16 |
| A-1124 | 1 3/8 | 3/4 | 7/8 | 2 5/16 | 2.08 | 2.34 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 12 mil series A

| catalog number | strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-20 | 1 1/2 | 11/16 | 7/8 | 2 5/16 | 2.088 | 2.245 |
| +A-145 | 2 | 5/8 | 3/4 | 2 5/16 | 2.169 | 2.58 |
| A-94 | 1 1/4 | 7/8 | 7/8 | 2 5/16 | 2.213 | 2.56 |
| +A-13 | 1 1/2 | 1/2 | 1 | 3 | 2.25 | 1.842 |
| A-420 | 3/4 | 3/4 | 2 | 2 | 2.252 | 1.518 |
| A-182 | 1 3/8 | 3/4 | 15/16 | 2 3/8 | 2.294 | 2.37 |
| A-334 | 1 1/4 | 1 | 29/32 | 2 1/32 | 2.301 | 2.88 |
| A-318 | 1 5/8 | 11/16 | 11/16 | 3 | 2.307 | 2.725 |
| A-184 | 3/4 | 3/4 | 1 3/8 | 3 | 2.322 | 1.61 |
| A-640 | 1 | 3/4 | 1 1/4 | 2 1/2 | 2.345 | 1.90 |
| A-317 | 1 7/8 | 3/4 | 3/4 | 2 1/4 | 2.374 | 3.00 |
| A-610 | 2 | 11/16 | 3/4 | 2 5/16 | 2.386 | 2.91 |
| A-292 | 1 3/4 | 5/8 | 3/4 | 2 15/16 | 2.411 | 2.61 |
| A-251 | 1 3/8 | 3/4 | 15/16 | 2 1/2 | 2.415 | 2.435 |
| A-495 | 2 | 3/4 | 1 | 1 5/8 | 2.438 | 2.95 |
| A-281 | 1 1/2 | 5/8 | 3/4 | 3 1/2 | 2.464 | 2.52 |
| A-836 | 1 3/4 | 11/16 | 3/4 | 2 3/4 | 2.48 | 2.82 |
| A-661 | 1 1/2 | 3/4 | 15/16 | 2 3/8 | 2.503 | 2.584 |
| A-127 | 2 | 3/4 | 3/4 | 2 1/4 | 2.531 | 3.20 |
| A-475 | 3/4 | 3/4 | 1 1/2 | 3 1/16 | 2.587 | 1.66 |
| A-705 | 2 | 13/16 | 3/4 | 2 1/8 | 2.588 | 3.44 |
| A-329 | 2 | 3/4 | 3/4 | 2 5/16 | 2.601 | 3.25 |
| A-729 | 1 1/8 | 3/4 | 1 1/8 | 2 3/4 | 2.613 | 2.185 |
| +A-49 | 1 1/2 | 3/4 | 15/16 | 2 1/2 | 2.635 | 2.66 |
| A-717 | 2 | 11/16 | 7/8 | 2 1/4 | 2.709 | 2.96 |
| A-751 | 1 1/2 | 11/16 | 3/4 | 3 1/2 | 2.709 | 2.70 |
| A-443 | 1 1/2 | 23/32 | 1 | 2 9/16 | 2.764 | 2.59 |
| +A-330 | 1 | 15/16 | 1 | 3 | 2.811 | 2.64 |
| A-38 | 1 1/2 | 5/8 | 1 | 3 | 2.814 | 2.395 |
| A-504 | 2 | 9/16 | 1 | 2 9/16 | 2.88 | 2.56 |
| A-448 | 1 1/2 | 3/4 | 1 | 2 9/16 | 2.882 | 2.73 |
| A-362 | 1 1/2 | 3/4 | 3/4 | 3 1/2 | 2.954 | 3.14 |
| +A-14 | 2 | 1/2 | 1 | 3 | 3.00 | 2.48 |
| A-117 | 2 1/2 | 13/32 | 1 | 3 | 3.045 | 2.41 |
| A-270 | 1 1/4 | 13/16 | 1 | 3 | 3.045 | 2.75 |
| A-384 | 1 1/2 | 11/16 | 1 5/16 | 2 1/4 | 3.047 | 2.48 |
| A-773 | 2 13/16 | 5/8 | 3/4 | 2 5/16 | 3.05 | 3.62 |
| +A-267 | 1 1/2 | 11/16 | 1 | 3 | 3.096 | 2.68 |
| A-377 | 1 | 1 1/4 | 1 1/4 | 2 | 3.126 | 3.38 |
| A-23 | 2 | 1/2 | 1 3/16 | 2 11/16 | 3.193 | 2.39 |
| A-308 | 1 1/2 | 5/8 | 1 | 3 1/2 | 3.283 | 2.64 |
| A-178 | 2 | 3/4 | 3/4 | 2 15/16 | 3.304 | 3.74 |
| A-397 | 1 3/4 | 21/32 | 3/4 | 3 7/8 | 3.336 | 3.337 |
| A-764 | 1 1/2 | 1 | 15/16 | 2 3/8 | 3.339 | 3.75 |
| A-177 | 1 1/2 | 3/4 | 1 | 3 | 3.375 | 2.99 |
| A-412 | 2 | 21/32 | 11/16 | 3 3/4 | 3.386 | 3.69 |
| A-333 | 1 | 15/16 | 1 1/4 | 3 | 3.513 | 2.76 |
| A-179 | 2 | 3/4 | 15/16 | 2 1/2 | 3.515 | 3.55 |
| A-444 | 1 1/2 | 1 | 15/16 | 2 1/2 | 3.515 | 3.85 |
| A-486 | 1 3/4 | 7/8 | 15/16 | 2 1/2 | 3.588 | 3.77 |

## 12 mil series A

| catalog number | strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-730 | 1 1/4 | 7/8 | 1 1/4 | 2 5/8 | 3.591 | 2.92 |
| +A-18 | 1 3/4 | 1/2 | 1 3/8 | 3 | 3.609 | 2.322 |
| A-453 | 1 1/4 | 1 | 1 5/16 | 2 1/4 | 3.69 | 3.29 |
| A-311 | 1 7/8 | 3/4 | 3/4 | 3 1/2 | 3.693 | 3.92 |
| A-611 | 2 1/4 | 13/16 | 7/8 | 2 5/16 | 3.697 | 4.17 |
| A-247 | 1 3/8 | 29/32 | 1 | 3 | 3.738 | 3.46 |
| A-39 | 2 1/2 | 1/2 | 1 | 3 | 3.75 | 3.07 |
| A-802 | 2 | 25/32 | 3/4 | 3 | 3.81 | 3.99 |
| A-854 | 2 | 5/8 | 1 1/8 | 2 3/4 | 3.85 | 3.15 |
| A-369 | 1 5/8 | 3/4 | 1 3/16 | 2 11/16 | 3.892 | 3.16 |
| A-387 | 1 1/8 | 1 1/16 | 15/16 | 3 1/2 | 3.92 | 3.76 |
| +A-185 | 1 3/8 | 5/8 | 1 5/16 | 3 1/2 | 3.945 | 2.56 |
| A-718 | 2 1/4 | 3/4 | 15/16 | 2 1/2 | 3.955 | 4.00 |
| A-139 | 1 5/8 | 13/16 | 1 | 3 | 3.96 | 3.58 |
| A-706 | 2 1/4 | 7/8 | 7/8 | 2 5/16 | 3.984 | 4.60 |
| A-881 | 2 13/16 | 7/8 | 5/8 | 2 5/8 | 4.04 | 5.83 |
| A-269 | 1 1/8 | 1 3/8 | 3/4 | 3 1/2 | 4.06 | 1.045 |
| A-259 | 1 3/8 | 29/32 | 15/16 | 3 1/2 | 4.088 | 3.75 |
| A-300 | 2 | 7/8 | 15/16 | 2 1/2 | 4.10 | 4.31 |
| A-592 | 2 | 5/8 | 1 1/4 | 2 5/8 | 4.103 | 3.111 |
| A-391 | 1 | 1 | 1 3/8 | 3 | 4.125 | 3.055 |
| +A-15 | 2 | 11/16 | 1 | 3 | 4.128 | 3.58 |
| A-258 | 2 1/4 | 5/8 | 1 | 3 | 4.218 | 3.58 |
| A-268 | 1 3/4 | 13/16 | 1 | 3 | 4.263 | 3.86 |
| A-181 | 2 1/2 | 3/4 | 15/16 | 2 1/2 | 4.393 | 4.44 |
| A-439 | 1 1/2 | 25/32 | 1 1/4 | 3 | 4.395 | 3.60 |
| A-104 | 1 1/4 | 1/2 | 2 3/8 | 3 | 4.452 | 1.98 |
| A-445 | 1 1/2 | 1 | 1 3/16 | 2 1/2 | 4.455 | 4.05 |
| A-255 | 7/8 | 3/4 | 1 5/8 | 4 3/16 | 4.464 | 2.37 |
| +A-48 | 2 | 3/4 | 1 | 3 | 4.50 | 3.98 |
| +A-111 | 1 1/2 | 1 | 1 | 3 | 4.50 | 4.30 |
| A-212 | 1 3/8 | 11/18 | 1 3/8 | 3 1/2 | 4.554 | 2.89 |
| A-419 | 2 1/2 | 23/32 | 16/16 | 2 3/4 | 4.634 | 4.44 |
| A-290 | 1 1/2 | 3/4 | 1 3/8 | 3 | 4.641 | 3.205 |
| A-347 | 2 | 1 | 15/16 | 2 1/2 | 4.685 | 5.14 |
| A-171 | 2 1/2 | 5/8 | 1 | 3 | 4.689 | 3.99 |
| A-449 | 2 | 5/8 | 1 1/4 | 3 | 4.689 | 3.36 |
| A-244 | 1 1/2 | 11/16 | 1 5/16 | 3 1/2 | 4.739 | 3.12 |
| A-240 | 1 5/8 | 1 | 1 | 3 | 4.875 | 4.65 |
| A-27 | 1 1/4 | 1 1/16 | 1 1/4 | 3 | 4.98 | 4.04 |
| A-58 | 1 3/4 | 9/16 | 1 | 5 1/8 | 5.043 | 3.56 |
| A-140 | 2 1/2 | 1/2 | 1 3/8 | 3 | 5.157 | 3.31 |
| A-302 | 1 1/4 | 1 | 1 3/8 | 3 | 5.157 | 3.79 |
| A-130 | 2 | 7/8 | 1 | 3 | 5.25 | 4.84 |
| A-340 | 1 3/8 | 15/16 | 1 3/8 | 3 | 5.313 | 3.87 |
| A-165 | 1 3/4 | 3/4 | 1 3/8 | 3 | 5.415 | 3.74 |
| A-731 | 1 1/2 | 7/8 | 1 3/8 | 3 | 5.415 | 3.87 |
| A-707 | 2 1/2 | 15/16 | 15/16 | 2 1/2 | 5.488 | 5.88 |
| A-612 | 2 1/2 | 7/8 | 15/16 | 2 3/4 | 5.638 | 5.69 |
| A-396 | 1 3/4 | 13/16 | 1 | 4 | 5.684 | 4.596 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 12 mil series A

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-456 | 2¼ | ⅞ | 15/16 | 2¼ | 5.812 | 4.986 |
| A-719 | 2½ | 13/16 | 1 | 2⅞ | 5.836 | 5.36 |
| A-301 | 1½ | ¾ | 1⅜ | 3⅞ | 5.995 | 3.74 |
| +A-16 | 2 | 1 | 1 | 3 | 6.00 | 5.73 |
| A-429 | 1 | ⅞ | 1¾ | 4 | 6.124 | 3.22 |
| A-421 | 1 | 1 | 1¾ | 3½ | 6.125 | 3.52 |
| +A-19 | 2 | ¾ | 1⅜ | 3 | 6.189 | 4.28 |
| A-601 | 1½ | 1⅜ | 1 | 3 | 6.189 | 6.54 |
| A-390 | 1¾ | ⅞ | 1⅜ | 3 | 6.315 | 4.52 |
| A-508 | 2 13/16 | ¾ | 1 | 3 | 6.327 | 5.60 |
| A-305 | ⅞ | ¾ | 2⅜ | 4 3/16 | 6.525 | 2.62 |
| A-834 | 1¾ | ¾ | 1⅛ | 4½ | 6.62 | 4.56 |
| A-1070 | 2¾ | 13/32 | 1⅝ | 4 3/16 | 7.54 | 4.10 |
| A-309 | 2½ | ½ | 1 5/16 | 4 1/16 | 6.662 | 3.96 |
| A-437 | 2 | 15/16 | 1 3/16 | 3 | 6.678 | 5.45 |
| A-83 | 1¼ | 9/16 | 1 5/8 | 7⅜ | 6.80 | 3.48 |
| A-253 | 1¼ | 1¼ | 1¼ | 3½ | 6.839 | 5.41 |
| A-414 | 2¼ | 1 | 15/16 | 3¼ | 6.851 | 6.66 |
| A-441 | 1 | 1 | 1¾ | 4 | 7.00 | 3.78 |
| A-457 | 1 | ⅞ | 2 | 4 | 7.00 | 3.33 |
| A-304 | ⅞ | ¾ | 2 9/16 | 4 3/16 | 7.04 | 2.69 |
| +A-37 | 2¼ | 27/32 | 1 3/16 | 3⅛ | 7.05 | 5.51 |
| A-423 | 2 | 1 3/16 | 1 | 3 | 7.128 | 7.18 |
| A-588 | 2¼ | 1 | 1⅛ | 2⅞ | 7.277 | 6.44 |
| A-82 | 1¼ | 9/16 | 1 11/16 | 6¼ | 7.419 | 3.21 |
| A-40 | 2 | 1 | 1 3/16 | 3⅛ | 7.425 | 6.05 |
| A-215 | 1 | 1 | 2¼ | 3 5/16 | 7.452 | 3.68 |
| A-708 | 2½ | 1 | 1 | 3 | 7.50 | 7.16 |
| A-202 | 1¾ | 15/16 | 1 5/16 | 3½ | 7.532 | 5.30 |
| A-105 | 1½ | ¾ | 1⅜ | 4⅞ | 7.542 | 4.32 |
| A-407 | 2¼ | 29/32 | 1 3/16 | 3⅛ | 7.569 | 6.025 |
| A-413 | 2¼ | 29/32 | 1 3/16 | 3⅛ | 7.569 | 6.02 |
| A-428 | 1½ | ¾ | 1⅝ | 4 3/16 | 7.656 | 4.06 |
| A-732 | 1½ | 1 | 1⅝ | 3 3/16 | 7.772 | 4.92 |
| A-613 | 2¾ | ⅞ | 1⅛ | 2⅞ | 7.783 | 6.65 |
| A-364 | 1⅜ | 1⅜ | 1⅜ | 3 | 7.80 | 6.36 |
| +A-102 | 1½ | 1 5/16 | 1⅜ | 3 | 8.118 | 6.52 |
| A-474 | 1⅝ | ½ | 2 | 5 | 8.13 | 3.27 |
| A-461 | 2 13/16 | 13/16 | 1¼ | 2⅞ | 8.205 | 6.35 |
| +A-35 | 2 | 1 | 1⅜ | 3 | 8.25 | 6.10 |
| A-332 | 2 | 1 | 1 3/16 | 3½ | 8.316 | 6.45 |
| A-331 | 2½ | 13/16 | 1⅜ | 3 | 8.373 | 5.90 |
| A-595 | 1⅛ | ¾ | 2¾ | 3⅝ | 8.414 | 3.29 |
| A-720 | 2¾ | ⅞ | 1 3/16 | 3 | 8.574 | 7.72 |
| A-66 | 2¼ | ⅞ | 1¼ | 3½ | 8.614 | 6.20 |
| A-476 | 1⅜ | 11/16 | 1⅝ | 5⅝ | 8.646 | 4.07 |
| A-134 | 1 | 1 | 1 13/16 | 4⅞ | 8.84 | 4.27 |
| A-372 | 2½ | 1 | 1 3/16 | 3 | 8.91 | 7.40 |
| A-132 | 2 | 1½ | 1 | 3 | 9.00 | 9.80 |
| +A-53 | 2¼ | ⅞ | 1 5/16 | 3½ | 9.041 | 6.26 |
| A-509 | 2 13/16 | 29/32 | 1 3/16 | 3 | 9.081 | 7.35 |
| A-761 | 2 | 1 5/16 | 1 | 3½ | 9.184 | 8.79 |
| A-622 | 3⅜ | 1½ | ¾ | 2 7/16 | 9.253 | 14.42 |
| +A-54 | 2½ | 1 | 1 3/16 | 3⅛ | 9.281 | 7.56 |
| A-447 | 2 | 1⅛ | 1⅜ | 3 | 9.282 | 7.12 |
| +A-187 | 2½ | 1¼ | 1 | 3 | 9.375 | 9.60 |
| A-499 | 2 | 1 7/16 | 1 3/16 | 2¾ | 9.389 | 9.18 |
| A-1103 | 2 | 1 | 1⅜ | 3½ | 9.63 | 6.65 |
| A-63 | 1¾ | ¾ | 1¼ | 6 | 9.846 | 5.72 |
| +A-393 | 2½ | ⅞ | 1 5/16 | 3½ | 10.049 | 6.96 |
| A-814 | 2 13/16 | ⅞ | ⅞ | 4 11/16 | 10.08 | 8.79 |
| +A-119 | 2½ | 1 | 1⅜ | 3 | 10.314 | 7.64 |
| A-981 | 2 | 1¼ | 1⅜ | 3 | 10.32 | 8.16 |
| +A-196 | 2¼ | 1⅛ | 1⅜ | 3 | 10.44 | 8.00 |
| A-586 | 2½ | 1⅛ | 1 3/16 | 3⅛ | 10.444 | 8.804 |
| A-655 | 2¼ | 1¼ | 1 3/16 | 3⅛ | 10.444 | 9.09 |
| A-284 | 2½ | 1 1/8 | 1 | 4 | 10.62 | 9.15 |
| A-51 | 2 | 1 | 1⅜ | 3⅞ | 10.656 | 7.04 |
| A-380 | 1⅜ | 1⅜ | 1⅜ | 4⅛ | 10.725 | 7.48 |
| A-198 | 1¾ | ¾ | 1¾ | 4 11/16 | 10.773 | 5.16 |
| A-471 | 1⅜ | 1 | 1¾ | 4½ | 10.827 | 5.56 |
| A-477 | 2½ | 1 1/16 | 1⅜ | 3 | 10.953 | 8.27 |
| A-582 | 2¼ | 1⅝ | 1 | 3 | 10.968 | 10.50 |
| +A-355 | 2¼ | 1⅛ | 1¼ | 3½ | 11.074 | 8.50 |
| A-709 | 3 | 1 | 1 3/16 | 3⅛ | 11.138 | 9.07 |
| A-216 | 2¼ | ⅞ | 1⅝ | 3½ | 11.20 | 6.599 |
| A-418 | 1⅛ | 1 1/16 | 2 | 4 11/16 | 11.204 | 5.17 |
| A-883 | 1½ | 1⅜ | 1⅝ | 3⅜ | 11.30 | 7.60 |
| A-585 | 2 | 13/16 | 2⅜ | 2 15/16 | 11.328 | 5.50 |
| A-651 | 2½ | 1 | 1 5/16 | 3½ | 11.48 | 8.22 |
| A-733 | 1¾ | 1⅛ | 1¾ | 3⅜ | 11.63 | 4.34 |
| A-754 | 3⅜ | 15/16 | 1 3/16 | 3⅛ | 11.738 | 9.40 |
| A-608 | 2 | 1 7/16 | 1⅜ | 3 | 11.856 | 9.79 |
| +A-266 | 2¼ | 1 | 1⅜ | 3⅞ | 11.989 | 7.92 |
| A-452 | 2 | 1 | 2 | 3 | 12.00 | 6.773 |
| A-614 | 3 | 1 | 1¼ | 3¼ | 12.188 | 9.38 |
| A-188 | 2½ | 1⅝ | 1 | 3 | 12.189 | 13.70 |
| A-98 | 2 | 1 1/16 | 1 7/16 | 4 | 12.208 | 7.80 |
| A-590 | 2 | 1⅜ | 1 7/16 | 3⅛ | 12.35 | 9.52 |
| A-650 | 3 | 1 | 1⅜ | 3 | 12.375 | 9.18 |
| +A-254 | 2¼ | 13/16 | 1⅝ | 4 3/16 | 12.434 | 6.70 |
| A-468 | 1¾ | 1 | 1¾ | 4 1/16 | 12.442 | 6.67 |
| A-151 | 1⅝ | 1⅛ | 1⅝ | 4 3/16 | 12.443 | 6.90 |
| A-462 | 2 13/16 | 1 | 1½ | 3 | 12.654 | 8.79 |
| +A-467 | 2 13/16 | 1 3/32 | 1⅜ | 3 | 12.69 | 9.64 |
| A-865 | 2½ | 1⅛ | 1¼ | 3⅝ | 12.70 | 9.50 |
| A-600 | 2¾ | 15/16 | 1 7/16 | 3½ | 12.961 | 8.55 |
| A-367 | 2 | 1¼ | 1⅜ | 3⅞ | 13.322 | 9.311 |
| A-491 | 2¼ | ⅞ | 1⅝ | 4 3/16 | 13.402 | 7.31 |
| A-510 | 2 13/16 | 1 3/16 | 1¼ | 3¼ | 13.572 | 10.95 |

+ **preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 12 mil series A

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-338 | 1¾ | 1⅛ | 1⅝ | 4¼ | 13.60 | 7.78 |
| A-189 | 2 | 1 | 1⅝ | 4¼ | 13.80 | 7.45 |
| A-1127 | 2¾ | 1 | 1 7/16 | 3½ | 13.80 | 9.19 |
| A-378 | 1¼ | 1⅝ | 1⅝ | 4 3/16 | 13.82 | 8.79 |
| A-417 | 1½ | 1⅛ | 1¾ | 4 11/16 | 13.848 | 7.16 |
| A-84 | 1⅝ | 13/16 | 2 | 5¼ | 13.86 | 5.83 |
| +A-203 | 2¼ | 1⅛ | 1⅝ | 3⅜ | 13.881 | 8.85 |
| A-29 | 2½ | 1 | 1 9/16 | 3 9/16 | 13.91 | 8.63 |
| A-466 | 2 13/16 | 15/16 | 1⅜ | 3⅞ | 14.00 | 9.14 |
| A-429 | 1⅜ | 1⅜ | 1¾ | 4¼ | 14.063 | 7.98 |
| A-107 | 1¼ | 1¼ | 3 | 3 | 14.067 | 6.44 |
| A-323 | 2¼ | 1 11/16 | 1 3/16 | 3⅛ | 14.10 | 13.65 |
| A-623 | 3⅜ | 1½ | 1 | 2 13/16 | 14.237 | 16.08 |
| A-805 | 1¾ | 1⅛ | 1⅝ | 4½ | 14.40 | 8.04 |
| A-891 | 2½ | 1 5/16 | 1 7/16 | 3⅛ | 14.728 | 11.20 |
| A-306 | 2 | 1 | 1¾ | 4¼ | 14.875 | 7.82 |
| A-634 | 2¼ | 1 | 1⅜ | 4⅞ | 15.083 | 9.08 |
| A-468 | 1¼ | 1¼ | 1 5/16 | 7⅜ | 15.126 | 8.62 |
| A-249 | 1½ | 1½ | 1½ | 4½ | 15.188 | 9.71 |
| A-386 | 2 | 1⅛ | 1⅝ | 4 3/16 | 15.311 | 8.80 |
| A-1076 | 2½ | ⅞ | 1½ | 4 11/16 | 15.40 | 8.50 |
| A-473 | 2½ | 1½ | 1⅜ | 3 | 15.468 | 13.01 |
| A-801 | 1¼ | 1¼ | 2⅜ | 4 3/16 | 15.50 | 6.88 |
| A-811 | 2 13/16 | 13/16 | 1⅝ | 4 3/16 | 15.537 | 8.36 |
| A-469 | 1¾ | 1⅛ | 1⅝ | 4⅞ | 15.60 | 8.42 |
| +A-514 | 3⅜ | 1⅛ | 1⅜ | 3 | 15.663 | 12.10 |
| A-810 | 3⅜ | 1⅛ | 1⅜ | 3 | 15.70 | 11.90 |
| +A-287 | 2¼ | 1 | 1¾ | 4 | 15.752 | 8.50 |
| A-777 | 1½ | 1½ | 1¾ | 4 | 15.752 | 9.43 |
| A-628 | 3⅜ | 1⅛ | 1⅜ | 3 1/16 | 15.987 | 12.13 |
| A-388 | 2 | 1 3/16 | 1⅝ | 4 3/16 | 16.17 | 9.42 |
| A-734 | 1⅞ | 1¼ | 1¾ | 4 | 16.408 | 9.32 |
| A-433 | 2¼ | 1⅜ | 1⅜ | 3⅞ | 16.484 | 11.84 |
| A-710 | 3¼ | 1¼ | 1¼ | 3¼ | 16.507 | 13.51 |
| A-630 | 2 | 1½ | 1 9/16 | 3 9/16 | 16.692 | 11.60 |
| A-500 | 2 13/16 | ⅞ | 1⅝ | 4 3/16 | 16.748 | 9.13 |
| A-122 | 2½ | 1 | 1⅜ | 4⅞ | 16.76 | 10.10 |
| A-618 | 3¼ | 1⅛ | 1 5/16 | 3½ | 16.79 | 12.42 |
| A-113 | 1¾ | 1 3/16 | 1¾ | 4 11/16 | 17.055 | 8.94 |
| A-893 | 2¼ | 1⅛ | 1⅝ | 4 3/16 | 17.225 | 9.44 |
| A-721 | 3¼ | 1 1/16 | 1 7/16 | 3½ | 17.364 | 11.65 |
| +A-789 | 2 13/16 | 2 | 1 1/16 | 3 | 17.919 | 20.46 |
| A-389 | 1⅝ | 1⅝ | 1⅝ | 4 3/16 | 17.975 | 11.43 |
| A-337 | 2¼ | 1⅛ | 1¾ | 4 1/16 | 17.991 | 9.91 |
| A-484 | 2¼ | 1¾ | 1 5/16 | 3½ | 18.085 | 15.40 |
| A-218 | 1⅝ | 1⅝ | 1⅝ | 4¼ | 18.241 | 11.50 |
| A-512 | 2¼ | 1½ | 1⅝ | 3⅜ | 18.509 | 12.80 |
| A-274 | 2½ | 1 3/32 | 1⅝ | 4 3/16 | 18.611 | 9.68 |
| A-430 | 2 | 1 | 2 | 4 11/16 | 18.752 | 8.54 |
| A-813 | 3⅜ | 1½ | 1 3/16 | 3⅛ | 18.797 | 17.41 |

## 12 mil series A

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| A-283 | 2½ | 1 5/16 | 1 7/16 | 4 | 18.852 | 12.70 |
| A-237 | 2½ | 1⅛ | 1⅜ | 4⅞ | 18.857 | 11.65 |
| A-771 | 2¼ | 1½ | 1⅝ | 3⅝ | 19.88 | 13.10 |
| A-435 | 2¼ | 1 3/16 | 1¼ | 6 | 20.046 | 12.61 |
| A-1144 | 2¾ | 1 3/32 | 1⅝ | 4 3/16 | 20.40 | 11.60 |
| A-620 | 3⅛ | 1¼ | 1½ | 3½ | 20.507 | 14.03 |
| A-350 | 2½ | 1½ | 1⅝ | 3⅜ | 20.567 | 14.25 |
| A-324 | 1½ | 1 7/16 | 2 3/16 | 4⅜ | 20.637 | 9.86 |
| A-606 | 3⅛ | ¾ | 1 13/16 | 4⅞ | 20.704 | 9.52 |
| +A-459 | 2 13/16 | 1 3/32 | 1⅝ | 4 3/16 | 20.90 | 11.90 |
| A-248 | 1⅝ | 1⅝ | 1⅝ | 4⅞ | 20.924 | 12.37 |
| A-780 | 2¼ | 1⅜ | 1⅝ | 4 3/16 | 21.057 | 12.65 |
| A-624 | 3⅜ | 1½ | 1 5/16 | 3 3/16 | 21.178 | 17.90 |
| A-762 | 3½ | 29/32 | 1 5/16 | 4 3/16 | 21.581 | 11.82 |
| A-735 | 2 | 1⅜ | 1 13/16 | 4⅜ | 21.801 | 11.77 |
| A-749 | 2 13/16 | 1 5/32 | 1⅝ | 4 3/16 | 22.125 | 12.66 |
| A-658 | 3¼ | 1⅛ | 1⅜ | 4½ | 22.622 | 28.58 |
| A-446 | 2½ | 1 5/16 | 1⅝ | 4¼ | 22.653 | 13.44 |
| A-386 | 2 | 2 | 1 7/16 | 4⅛ | 23.711 | 18.02 |
| A-427 | 2½ | 1¼ | 1¾ | 4½ | 24.611 | 13.28 |
| A-598 | 1½ | ¾ | 2⅞ | 7⅝ | 24.659 | 6.82 |
| A-507 | 2 | 2 | 1⅜ | 4½ | 24.75 | 18.70 |
| +A-480 | 2 13/16 | 1 3/32 | 1¾ | 4 11/16 | 25.20 | 12.90 |
| A-502 | 2½ | 1 9/16 | 1 7/16 | 4½ | 25.25 | 16.97 |
| A-192 | 1⅞ | 1¼ | 2 | 5 7/16 | 25.489 | 11.40 |
| A-982 | 2½ | 1½ | 1⅝ | 4 3/16 | 25.50 | 15.80 |
| A-893 | 2½ | 1 | 2⅛ | 4⅞ | 25.90 | 11.10 |
| A-711 | 3½ | 1⅜ | 1⅜ | 3⅞ | 25.645 | 18.24 |
| A-488 | 2½ | 1½ | 1⅝ | 4¼ | 25.90 | 16.00 |
| A-1134 | 2½ | 1 | 2¼ | 4⅝ | 26.00 | 10.90 |
| A-743 | 3½ | 1 3/32 | 1⅝ | 4 3/16 | 26.058 | 14.80 |
| A-460 | 2 13/16 | 1⅜ | 1⅝ | 4 3/16 | 26.317 | 15.94 |
| A-478 | 2 13/16 | 1 13/32 | 1⅝ | 4 3/16 | 26.908 | 16.40 |
| A-722 | 3½ | 1 3/16 | 1⅝ | 4 | 27.028 | 15.86 |
| A-1167 | 2⅞ | 1 5/16 | 1¾ | 4¼ | 28.00 | 15.60 |
| A-635 | 3 | 1⅜ | 1⅝ | 4 3/16 | 28.072 | 17.00 |
| A-778 | 2 13/16 | 1⅞ | 1⅜ | 3⅞ | 28.094 | 22.30 |
| A-411 | 1¾ | 1¾ | 1¾ | 5¼ | 28.14 | 15.477 |
| A-880 | 2 13/16 | 1 5/16 | 1¾ | 4⅜ | 28.245 | 15.60 |
| A-503 | 2 13/16 | 1⅜ | 1¾ | 4¼ | 28.76 | 16.33 |
| A-621 | 3¾ | 1⅜ | 1½ | 3¾ | 29.003 | 19.73 |
| A-748 | 1¾ | 2¼ | 1¾ | 4¼ | 29.291 | 19.46 |
| +A-431 | 2 | 7½ | ⅞ | 2 5/16 | 30.345 | 3.35 |
| +A-819 | 2 13/16 | 1 3/32 | 2 | 5 | 30.76 | 13.90 |
| A-1074 | 2 | 1⅞ | 1¾ | 4¾ | 31.20 | 18.40 |
| A-775 | 1⅝ | 1 9/16 | 2 3/16 | 5⅝ | 31.236 | 13.40 |
| A-997 | 1¾ | 1½ | 1½ | 8 | 31.60 | 16.10 |
| A-907 | 3⅜ | 1 13/32 | 1⅝ | 4 3/16 | 32.30 | 19.50 |
| A-1069 | 3⅜ | ¾ | 2⅛ | 6 1/16 | 32.60 | 12.30 |
| A-616 | 3½ | 1¼ | 1¾ | 4¼ | 32.538 | 18.00 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **12 mil series A** | | | | | | |
| A-648 | 3 1/2 | 1 3/8 | 1 5/8 | 4 3/16 | 32.754 | 19.85 |
| A-481 | 2 13/16 | 1 1/2 | 2 1/4 | 3 9/16 | 33.807 | 17.82 |
| A-636 | 3 3/8 | 15/16 | 2 | 5 7/16 | 34.384 | 14.59 |
| A-296 | 2 1/2 | 1 3/4 | 1 3/4 | 4 1/2 | 34.452 | 20.38 |
| +A-516 | 3 1/8 | 1 1/4 | 1 13/16 | 4 7/8 | 34.505 | 17.48 |
| A-515 | 3 3/8 | 1 5/16 | 1 13/16 | 4 3/8 | 35.105 | 19.00 |
| A-736 | 2 1/4 | 1 1/2 | 2 1/4 | 4 3/4 | 36.072 | 16.20 |
| A-517 | 3 1/8 | 1 3/8 | 1 13/16 | 4 7/8 | 37.957 | 19.70 |
| +A-627 | 3 1/8 | 1 1/8 | 1 7/8 | 5 13/16 | 38.319 | 17.22 |
| A-599 | 3 1/8 | 1 1/2 | 1 1/2 | 5 1/2 | 38.676 | 22.70 |
| A-742 | 3 1/2 | 1 5/8 | 1 5/8 | 4 3/16 | 38.71 | 24.30 |
| A-723 | 4 | 1 5/16 | 1 3/4 | 4 1/4 | 39.032 | 21.87 |
| A-657 | 3 1/2 | 1 1/4 | 1 3/4 | 5 1/4 | 40.194 | 20.30 |
| +A-518 | 3 1/8 | 1 7/32 | 1 7/8 | 5 13/16 | 41.509 | 18.90 |
| A-629 | 2 13/16 | 2 3/16 | 1 5/8 | 4 3/16 | 41.876 | 29.40 |
| A-780 | 2 1/2 | 2 1/4 | 1 3/4 | 4 1/4 | 41.90 | 27.20 |
| A-649 | 3 7/8 | 1 5/32 | 2 | 5 7/16 | 42.43 | 18.69 |
| A-522 | 2 1/2 | 1 23/32 | 2 | 5 | 42.98 | 21.60 |
| A-535 | 3 | 1 1/8 | 2 1/4 | 5 3/4 | 43.666 | 17.10 |
| +A-533 | 3 1/8 | 1 5/32 | 2 3/16 | 5 5/8 | 44.466 | 18.00 |
| A-604 | 2 13/16 | 2 15/16 | 1 1/4 | 4 5/8 | 47.749 | 45.00 |
| A-527 | 2 1/8 | 1 3/4 | 2 1/8 | 6 1/8 | 48.406 | 24.90 |
| A-908 | 2 13/16 | 1 7/16 | 1 1/2 | 8 | 48.50 | 24.30 |
| A-632 | 3 1/8 | 1 1/4 | 2 1/2 | 5 | 48.825 | 19.14 |
| A-921 | 3 | 1 3/4 | 1 1/4 | 7 1/2 | 49.20 | 32.60 |
| A-949 | 3 3/8 | 1 7/8 | 1 3/4 | 4 1/2 | 49.90 | 29.60 |
| A-520 | 4 | 1 1/4 | 2 | 5 | 50.00 | 23.20 |
| A-856 | 3 1/2 | 1 3/8 | 1 7/8 | 5 5/8 | 50.70 | 24.00 |
| +A-523 | 3 3/8 | 1 3/8 | 2 | 5 7/16 | 50.466 | 23.08 |
| +A-745 | 1 3/4 | 3 | 2 | 5 | 52.50 | 31.20 |
| A-737 | 2 1/2 | 1 11/16 | 2 1/2 | 5 | 52.75 | 21.87 |
| A-603 | 3 1/8 | 2 15/16 | 1 1/4 | 4 5/8 | 53.063 | 50.00 |
| A-617 | 4 | 1 1/2 | 1 7/8 | 4 3/4 | 53.438 | 27.90 |
| A-724 | 4 1/4 | 1 7/16 | 1 13/16 | 4 7/8 | 53.947 | 27.88 |
| A-524 | 3 3/8 | 1 1/4 | 2 1/8 | 6 1/16 | 54.346 | 22.20 |
| A-753 | 3 3/4 | 1 15/32 | 2 | 5 | 55.09 | 27.00 |
| +A-521 | 4 | 1 7/16 | 2 | 5 | 57.48 | 27.60 |
| +A-763 | 4 | 1 5/8 | 1 7/8 | 4 3/4 | 57.893 | 30.53 |
| A-664 | 3 1/2 | 1 3/8 | 1 7/8 | 6 7/16 | 58.00 | 24.00 |
| +A-525 | 3 3/8 | 1 11/32 | 2 1/8 | 6 1/16 | 58.432 | 24.20 |
| A-638 | 3 1/2 | 2 1/4 | 1 3/4 | 4 1/4 | 58.569 | 39.00 |
| +A-529 | 3 3/8 | 1 13/32 | 2 1/8 | 6 5/16 | 63.644 | 26.20 |
| A-969 | 4 | 2 | 1 5/8 | 5 1/8 | 66.60 | 40.30 |
| +A-534 | 3 3/4 | 1 13/32 | 2 3/16 | 6 1/16 | 69.90 | 29.00 |
| A-872 | 2 3/4 | 2 3/4 | 1 3/4 | 5 1/4 | 69.50 | 44.00 |
| A-960 | 3 3/4 | 1 3/4 | 2 1/4 | 4 3/4 | 70.10 | 32.60 |
| A-738 | 2 3/4 | 1 13/16 | 2 3/4 | 5 1/4 | 71.941 | 27.62 |
| A-725 | 4 1/2 | 1 5/8 | 2 | 5 | 73.13 | 35.36 |
| A-1009 | 2 3/4 | 2 3/4 | 1 7/8 | 5 1/4 | 74.50 | 44.90 |
| +A-536 | 3 3/4 | 1 13/32 | 2 1/4 | 6 9/16 | 77.852 | 30.60 |
| **12 mil series A** | | | | | | |
| A-1151 | 4 1/2 | 1 1/2 | 2 1/8 | 5 7/16 | 78.00 | 35.80 |
| A-618 | 4 | 1 11/18 | 2 1/8 | 5 1/2 | 78.914 | 26.00 |
| +A-757 | 4 | 2 1/4 | 1 7/8 | 4 3/4 | 80.156 | 46.47 |
| A-652 | 3 3/4 | 1 21/32 | 2 1/8 | 6 1/8 | 80.826 | 34.96 |
| +A-526 | 4 | 1 9/16 | 2 1/8 | 6 1/8 | 81.322 | 34.80 |
| A-857 | 3 3/4 | 1 3/4 | 2 1/8 | 5 7/8 | 81.90 | 36.20 |
| +A-537 | 3 3/4 | 1 15/32 | 2 1/4 | 6 3/4 | 83.666 | 32.70 |
| +A-555 | 2 1/2 | 1 26/32 | 2 3/4 | 7 3/16 | 88.024 | 29.50 |
| A-871 | 3 | 2 13/16 | 1 7/8 | 5 5/8 | 89.00 | 52.30 |
| A-602 | 4 | 1 13/16 | 2 1/8 | 5 7/8 | 90.487 | 40.80 |
| A-821 | 3 3/4 | 1 7/8 | 2 1/4 | 5 3/4 | 91.00 | 39.40 |
| +A-530 | 4 | 1 9/16 | 2 1/8 | 7 3/16 | 95.435 | 38.60 |
| A-545 | 2 1/4 | 2 1/4 | 2 3/8 | 8 | 96.20 | 36.20 |
| A-752 | 4 | 1 9/16 | 2 1/8 | 7 9/16 | 100.401 | 39.40 |
| A-739 | 3 | 2 | 2 13/16 | 6 1/4 | 105.45 | 37.55 |
| +A-558 | 2 1/2 | 1 25/32 | 2 3/4 | 8 5/8 | 105.622 | 34.00 |
| A-547 | 3 1/2 | 1 1/2 | 2 1/2 | 8 1/16 | 105.814 | 35.30 |
| +A-559 | 2 1/2 | 1 13/16 | 2 3/4 | 8 5/8 | 107.45 | 33.20 |
| A-1140 | 2 1/2 | 3 5/8 | 2 | 6 | 108.00 | 62.80 |
| +A-833 | 4 | 1 21/32 | 2 1/4 | 7 1/4 | 108.054 | 41.74 |
| A-556 | 3 3/8 | 1 1/2 | 2 3/4 | 7 7/8 | 109.644 | 34.40 |
| +A-543 | 4 | 1 21/32 | 2 3/8 | 7 6/16 | 115.032 | 42.70 |
| +A-539 | 4 | 1 13/16 | 2 1/4 | 7 1/4 | 118.233 | 46.50 |
| A-667 | 4 | 1 9/16 | 2 6/16 | 8 1/4 | 119.171 | 42.40 |
| A-531 | 4 | 2 | 2 1/8 | 7 3/16 | 122.196 | 50.70 |
| A-538 | 4 | 2 1/32 | 2 1/4 | 6 3/4 | 123.383 | 51.50 |
| A-741 | 2 13/16 | 1 3/4 | 3 1/16 | 8 1/4 | 124.311 | 35.90 |
| A-951 | 2 1/2 | 2 1/2 | 2 11/16 | 7 1/2 | 126.00 | 46.00 |
| A-1071 | 4 | 2 | 2 1/2 | 6 3/8 | 127.50 | 50.00 |
| A-1133 | 4 | 2 1/2 | 2 3/8 | 5 3/8 | 127.70 | 62.10 |
| +A-540 | 4 | 1 13/16 | 2 1/4 | 8 1/8 | 132.503 | 50.30 |
| A-1177 | 4 1/2 | 2 1/4 | 2 1/8 | 6 1/4 | 134.60 | 61.60 |
| +A-564 | 2 13/16 | 1 28/32 | 3 1/16 | 8 1/4 | 135.399 | 40.30 |
| A-1147 | 4 | 2 1/4 | 2 1/4 | 6 3/4 | 136.70 | 57.50 |
| A-1073 | 4 | 1 1/2 | 2 3/4 | 8 1/2 | 140.30 | 42.00 |
| A-977 | 3 3/4 | 2 1/2 | 2 1/4 | 6 3/4 | 142.40 | 62.90 |
| A-967 | 5 1/2 | 2 1/2 | 1 5/8 | 6 7/16 | 144.20 | 84.10 |
| A-532 | 4 | 1 9/16 | 2 1/8 | 11 | 146.00 | 50.60 |
| A-549 | 4 | 1 13/16 | 2 1/2 | 8 1/16 | 146.083 | 51.00 |
| A-830 | 4 | 2 7/16 | 2 | 7 5/8 | 148.70 | 67.10 |
| A-544 | 4 | 2 3/16 | 2 3/8 | 7 5/16 | 151.987 | 59.80 |
| +A-548 | 4 | 1 29/32 | 2 1/2 | 8 1/16 | 153.662 | 53.70 |
| A-914 | 3 1/8 | 2 1/2 | 2 3/4 | 7 1/4 | 155.70 | 59.70 |
| A-1135 | 4 | 2 7/16 | 2 | 8 1/8 | 158.40 | 70.60 |
| A-740 | 3 1/4 | 2 3/16 | 3 1/4 | 6 7/8 | 158.888 | 49.45 |
| +A-566 | 2 13/16 | 1 31/32 | 3 1/16 | 9 3/8 | 159.00 | 45.10 |
| A-541 | 3 1/2 | 2 5/8 | 2 1/4 | 8 1/8 | 167.968 | 69.20 |
| A-968 | 5 1/2 | 2 5/8 | 1 7/16 | 8 1/8 | 168.20 | 101.00 |
| A-546 | 4 1/4 | 2 3/16 | 2 1/2 | 7 5/16 | 170.00 | 64.20 |
| A-890 | 3 1/4 | 3 1/4 | 2 1/2 | 6 1/2 | 171.60 | 77.40 |

+ **preferred core sizes**: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

pg 12

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **12 mil series A** | | | | | | |
| **A-1148** | 4 1/2 | 3 1/8 | 2 1/8 | 5 7/8 | 176.00 | 90.50 |
| **+A-571** | 2 13/16 | 2 3/32 | 3 1/8 | 9 5/8 | 176.00 | 49.10 |
| **A-867** | 3 1/4 | 3 3/8 | 2 1/2 | 6 1/2 | 178.10 | 79.50 |
| **A-565** | 3 1/8 | 2 | 3 1/8 | 9 5/8 | 187.00 | 51.60 |
| **+A-570** | 3 1/8 | 2 1/16 | 3 1/8 | 9 5/8 | 193.00 | 54.00 |
| **A-557** | 5 | 1 21/32 | 2 3/4 | 8 5/8 | 196.00 | 60.20 |
| **+A-572** | 3 1/8 | 2 1/16 | 3 5/16 | 9 5/8 | 205.00 | 54.30 |
| **A-870** | 3 3/4 | 3 3/8 | 2 1/2 | 6 1/2 | 205.60 | 91.60 |
| **+A-561** | 3 1/8 | 2 7/32 | 3 | 10 | 208.00 | 58.90 |
| **A-551** | 4 | 1 29/32 | 2 1/2 | 11 1/4 | 214.00 | 66.60 |
| **A-550** | 4 | 2 11/16 | 2 1/2 | 8 1/16 | 216.707 | 80.90 |
| **A-1100** | 4 5/8 | 3 3/4 | 2 1/4 | 6 3/4 | 217.80 | 131.50 |
| **A-562** | 3 3/8 | 2 7/32 | 3 | 10 | 224.00 | 64.00 |
| **A-1188** | 4 | 3 1/4 | 2 3/8 | 7 5/16 | 226.00 | 96.00 |
| **A-957** | 5 1/2 | 2 3/4 | 1 7/16 | 10 7/16 | 226.50 | 125.60 |
| **A-542** | 4 | 3 1/8 | 2 1/4 | 8 1/8 | 228.516 | 99.40 |
| **A-573** | 3 1/8 | 2 5/16 | 3 5/16 | 9 5/8 | 230.00 | 62.20 |
| **A-1263** | 6 | 2 | 2 5/8 | 7 5/16 | 230.00 | 83.00 |
| **A-1160** | 4 1/2 | 4 | 2 1/8 | 6 1/8 | 232.20 | 132.00 |
| **A-575** | 2 1/2 | 2 1/2 | 3 1/2 | 10 3/4 | 233.00 | 59.20 |
| **A-552** | 4 1/2 | 1 29/32 | 2 1/2 | 11 1/4 | 242.00 | 75.00 |
| **A-987** | 4 | 3 | 2 1/2 | 8 1/8 | 243.80 | 94.20 |
| **A-553** | 4 | 2 3/16 | 2 1/2 | 11 1/4 | 246.00 | 81.10 |
| **A-1245** | 7 1/2 | 1 3/4 | 2 1/4 | 8 1/2 | 251.00 | 94.50 |
| **A-1259** | 6 | 2 1/4 | 2 5/8 | 7 5/16 | 259.00 | 94.50 |
| **A-565** | 5 5/8 | 1 29/32 | 3 1/18 | 8 1/4 | 270.00 | 79.50 |
| **A-577** | 3 1/4 | 2 1/8 | 4 | 10 | 276.00 | 62.40 |
| **A-1002** | 3 1/2 | 4 1/4 | 2 3/4 | 6 3/4 | 276.80 | 125.30 |
| **A-554** | 4 | 2 11/16 | 2 1/2 | 11 1/4 | 277.00 | 98.50 |
| **A-1248** | 7 1/2 | 2 | 2 1/4 | 8 1/2 | 287.00 | 112.00 |
| **A-563** | 3 1/8 | 3 1/8 | 3 | 10 | 292.00 | 91.50 |
| **A-567** | 5 5/8 | 1 29/32 | 3 1/16 | 9 3/8 | 307.00 | 86.00 |
| **A-574** | 5 | 2 1/32 | 3 3/8 | 9 1/16 | 312.00 | 82.50 |
| **A-578** | 2 | 3 | 4 | 13 | 312.00 | 68.00 |
| **A-956** | 7 1/2 | 2 3/8 | 1 9/16 | 11 1/4 | 312.80 | 151.00 |
| **A-1162** | 5 | 3 3/8 | 2 3/4 | 6 3/4 | 313.20 | 130.00 |
| **A-568** | 5 5/8 | 1 31/32 | 3 1/8 | 9 5/8 | 332.00 | 92.00 |
| **A-1243** | 5 | 3 3/4 | 2 3/4 | 6 3/4 | 348.00 | 150.00 |
| **A-950** | 4 7/8 | 3 3/4 | 2 3/8 | 8 3/8 | 363.50 | 155.50 |
| **A-555** | 7 1/2 | 2 7/8 | 1 9/16 | 11 1/4 | 379.70 | 192.00 |
| **A-538** | 6 | 3 1/4 | 3 7/8 | 5 1/8 | 387.50 | 140.00 |
| **A-594** | 4 7/8 | 4 | 2 3/8 | 8 3/8 | 387.80 | 173.00 |
| **A-530** | 6 1/2 | 3 | 3 1/4 | 6 3/18 | 392.20 | 139.50 |
| **A-964** | 5 | 3 1/2 | 1 9/16 | 14 1/2 | 395.90 | 194.00 |
| **A-575** | 3 3/4 | 2 1/4 | 4 1/2 | 11 | 418.00 | 83.60 |
| **A-1255** | 6 1/2 | 2 5/32 | 3 | 10 | 420.00 | 119.00 |
| **A-576** | 4 1/2 | 2 1/4 | 3 3/4 | 11 5/8 | 440.00 | 97.20 |
| **A-1146** | 4 7/8 | 3 1/2 | 2 5/8 | 9 7/8 | 443.40 | 160.00 |
| **A-1239** | 5 1/4 | 3 5/8 | 2 3/4 | 8 5/8 | 451.00 | 170.00 |
| **A-988** | 7 1/2 | 2 5/16 | 3 7/8 | 6 15/16 | 464.80 | 130.00 |
| **12 mil series A** | | | | | | |
| **A-1175** | 5 | 3 | 3 | 10 3/8 | 466.90 | 140.00 |
| **A-1145** | 6 | 3 1/4 | 3 1/16 | 8 1/4 | 492.50 | 164.00 |
| **A-1158** | 5 | 3 1/4 | 3 | 10 3/8 | 506.00 | 152.00 |
| **A-566** | 7 1/2 | 3 | 1 9/16 | 14 1/2 | 510.40 | 241.00 |
| **A-961** | 3 1/4 | 4 | 3 1/2 | 11 5/8 | 528.90 | 143.00 |
| **A-525** | 6 | 3 1/2 | 3 1/16 | 8 1/4 | 530.60 | 181.00 |
| **A-1138** | 6 | 3 1/8 | 3 1/16 | 9 3/8 | 538.00 | 163.00 |
| **A-565** | 7 1/2 | 3 1/4 | 1 9/16 | 14 1/2 | 552.50 | 265.00 |
| **A-528** | 6 | 3 3/4 | 3 1/16 | 8 1/4 | 568.50 | 201.00 |
| **A-1240** | 7 1/2 | 2 3/16 | 3 5/16 | 10 1/2 | 570.00 | 147.00 |
| **A-1200** | 5 3/8 | 3 5/8 | 3 3/8 | 9 1/16 | 596.00 | 179.00 |
| **A-1055** | 7 1/2 | 4 3/8 | 2 1/4 | 8 1/2 | 627.30 | 301.00 |
| **A-570** | 7 1/2 | 4 3/8 | 2 1/4 | 8 1/2 | 627.30 | 293.00 |
| **A-1104** | 7 1/2 | 3 3/4 | 1 9/16 | 14 1/2 | 636.60 | 316.00 |
| **A-936** | 7 1/2 | 3 1/2 | 3 5/8 | 6 3/4 | 642.30 | 212.30 |
| **A-929** | 6 1/4 | 2 11/16 | 3 1/8 | 12 7/8 | 675.90 | 175.00 |
| **A-1197** | 5 3/8 | 4 1/4 | 3 3/8 | 9 1/16 | 698.00 | 222.00 |
| **A-1228** | 5 | 4 3/4 | 3 | 10 3/8 | 739.00 | 252.40 |
| **A-1159** | 5 3/8 | 4 5/8 | 3 3/8 | 9 1/16 | 761.00 | 247.00 |
| **A-1037** | 6 | 5 1/4 | 3 1/16 | 8 1/4 | 795.90 | 320.00 |
| **A-937** | 5 7/8 | 3 1/8 | 3 3/4 | 11 5/8 | 799.80 | 191.50 |
| **A-1056** | 7 1/2 | 3 3/4 | 2 | 14 1/2 | 814.90 | 335.00 |
| **A-942** | 6 | 3 1/8 | 3 3/4 | 11 5/8 | 817.40 | 196.00 |
| **A-958** | 6 | 4 3/4 | 3 1/16 | 9 3/8 | 818.40 | 297.80 |
| **A-946** | 4 | 3 | 6 | 12 3/4 | 918.00 | 145.00 |
| **A-1245** | 6 1/2 | 2 13/16 | 4 1/8 | 12 1/2 | 944.00 | 198.00 |
| **A-1105** | 7 1/2 | 5 | 3 7/8 | 6 15/16 | 1008.00 | 354.00 |
| **A-927** | 6 1/2 | 3 | 4 | 13 1/8 | 1024.00 | 219.00 |
| **A-1229** | 5 | 4 | 4 | 13 5/16 | 1065.00 | 242.00 |
| **A-959** | 7 1/8 | 3 7/8 | 4 1/2 | 11 | 1190.00 | 304.00 |
| **A-953** | 5 7/8 | 4 3/4 | 4 3/4 | 8 3/4 | 1195.00 | 299.00 |
| **A-1084** | 7 1/2 | 5 1/2 | 2 | 14 1/2 | 1196.00 | 543.00 |
| **A-954** | 5 7/8 | 5 | 4 3/4 | 8 3/4 | 1221.00 | 320.00 |
| **A-1154** | 6 7/8 | 4 1/2 | 4 | 10 | 1236.00 | 333.00 |
| **A-1090** | 7 1/2 | 6 1/4 | 3 7/8 | 6 15/16 | 1260.00 | 484.30 |
| **A-935** | 6 1/2 | 3 7/8 | 4 | 13 1/8 | 1323.00 | 300.00 |
| **A-1024** | 5 1/2 | 4 9/16 | 4 3/4 | 12 1/4 | 1455.00 | 310.00 |
| **A-989** | 6 7/8 | 6 | 4 | 10 | 1650.00 | 504.00 |
| **A-1196** | 6 1/2 | 5 1/4 | 4 | 13 1/8 | 1790.00 | 438.00 |
| **A-1224** | 6 | 4 | 5 | 18 | 2160.00 | 360.00 |

✚ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

| catalog number | dimensions in inches: strip width D | build up E | win-dow width F | win-dow length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series H** | | | | | | |
| **H-459** | 1/4 | 1/8 | 1/4 | 1/2 | .004 | .013 |
| **+H-568** | 1/4 | 1/8 | 1/4 | 5/8 | .005 | .016 |
| **+H-121** | 3/8 | 1/8 | 1/4 | 1/2 | .006 | .02 |
| **+H-447** | 1/4 | 3/16 | 1/4 | 5/8 | .008 | .026 |
| **H-669** | 3/8 | 7/64 | 1/4 | 3/4 | .008 | .133 |
| **+H-231** | 3/8 | 3/16 | 1/4 | 5/8 | .011 | .039 |
| **+H-283** | 1/4 | 1/4 | 1/4 | 7/8 | .014 | .046 |
| **+H-172** | 3/8 | 1/4 | 1/4 | 5/8 | .015 | .056 |
| **+H-549** | 1/2 | 3/16 | 1/4 | 5/8 | .015 | .053 |
| **H-671** | 1 1/2 | 3/16 | 1/2 | 1 1/8 | .016 | .26 |
| **+H-530** | 1/2 | 7/32 | 1/4 | 5/8 | .018 | .063 |
| **H-629** | 1/4 | 1/8 | 1/2 | 1 1/8 | .018 | .025 |
| **H-676** | 1 | 3/8 | 1/2 | 1 1/8 | .021 | .402 |
| **H-525** | 3/8 | 1/4 | 1/4 | 7/8 | .021 | .068 |
| **+H-550** | 5/8 | 7/32 | 1/4 | 5/8 | .021 | .081 |
| **+H-569** | 3/8 | 1/4 | 5/16 | 7/8 | .025 | .071 |
| **+H-99** | 3/8 | 7/32 | 5/16 | 1 | .026 | .065 |
| **+H-215** | 1/2 | 1/4 | 1/4 | 7/8 | .027 | .091 |
| **+H-430** | 3/8 | 3/16 | 3/8 | 1 | .027 | .056 |
| **+H-246** | 3/8 | 1/4 | 5/16 | 1 | .029 | .077 |
| **H-606** | 3/8 | 3/16 | 3/8 | 1 1/8 | .03 | .06 |
| **+H-531** | 1/2 | 1/4 | 5/16 | 7/8 | .034 | .095 |
| **H-615** | 1/2 | 3/16 | 3/8 | 1 | .035 | .075 |
| **+H-115** | 5/8 | 1/4 | 3/8 | 1 | .035 | .08 |
| **+H-425** | 3/4 | 7/32 | 1/4 | 7/8 | .036 | .112 |
| **H-116** | 3/8 | 1/4 | 3/8 | 1 1/8 | .039 | .085 |
| **H-402** | 1/2 | 3/16 | 3/8 | 1 1/8 | .039 | .081 |
| **H-125** | 5/8 | 1/4 | 6/16 | 13/16 | .04 | .113 |
| **H-588** | 1/2 | 3/8 | 1/4 | 7/8 | .041 | .153 |
| **+H-38** | 1/4 | 1/4 | 1/2 | 1 5/16 | .042 | .067 |
| **+H-235** | 3/8 | 1/4 | 3/8 | 1 3/16 | .042 | .088 |
| **H-156** | 1/2 | 1/4 | 1/2 | 11/16 | .043 | .094 |
| **+H-551** | 5/8 | 1/4 | 6/16 | 7/8 | .043 | .12 |
| **+H-210** | 3/8 | 3/8 | 5/16 | 1 | .044 | .129 |
| **H-532** | 1/2 | 7/32 | 5/16 | 1 | .044 | .118 |
| **+H-250** | 1/2 | 1/4 | 3/8 | 1 | .047 | .107 |
| **H-636** | 1/2 | 1/4 | 1/4 | 1 9/16 | .047 | .14 |
| **H-276** | 1/2 | 3/16 | 3/8 | 1 3/8 | .048 | .093 |
| **H-110** | 1/4 | 1/4 | 5/8 | 1 5/16 | .051 | .071 |
| **H-367** | 3/8 | 5/16 | 3/8 | 1 3/16 | .052 | .116 |
| **H-672** | 3/8 | 1/4 | 1/2 | 1 1/8 | .053 | .092 |
| **H-233** | 1/4 | 1/8 | 3/4 | 2 5/16 | .053 | .049 |
| **H-620** | 1/2 | 3/16 | 5/16 | 13/16 | .054 | .064 |
| **H-398** | 1/2 | 7/32 | 1/2 | 1 | .055 | .098 |
| **H-684** | 1/2 | 1/4 | 7/16 | 1 1/16 | .058 | .114 |
| **H-365** | 1/2 | 7/32 | 1/2 | 1 1/16 | .058 | .101 |
| **H-199** | 1/2 | 7/32 | 3/8 | 1 | .059 | .141 |
| **+H-203** | 1/2 | 1/4 | 3/8 | 1 1/4 | .059 | .122 |
| **+H-382** | 5/8 | 1/4 | 3/8 | 1 | .059 | .133 |
| **+H-360** | 5/8 | 5/16 | 5/16 | 1 | .061 | .17 |

| catalog number | dimensions in inches: strip width D | build up E | win-dow width F | win-dow length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series H** | | | | | | |
| **H-504** | 3/4 | 3/8 | 1/4 | 7/8 | .061 | .23 |
| **+H-39** | 3/8 | 1/4 | 1/2 | 1 5/16 | .062 | .10 |
| **+H-114** | 1/2 | 1/4 | 1/2 | 1 | .063 | .124 |
| **+H-139** | 3/8 | 3/8 | 3/8 | 1 3/16 | .063 | .146 |
| **+H-456** | 1/2 | 3/8 | 5/16 | 1 1/16 | .063 | .178 |
| **H-513** | 3/8 | 17/64 | 1/2 | 1 1/4 | .063 | .105 |
| **+H-363** | 5/8 | 9/32 | 3/8 | 1 | .066 | .154 |
| **+H-552** | 3/4 | 9/32 | 5/16 | 1 | .066 | .18 |
| **H-619** | 3/4 | 5/16 | 5/16 | 15/16 | .068 | .196 |
| **+H-137** | 5/8 | 1/4 | 3/8 | 1 3/16 | .07 | .145 |
| **+H-1** | 1/2 | 1/4 | 1/2 | 1 1/8 | .071 | .122 |
| **H-607** | 5/8 | 3/8 | 5/16 | 1 | .073 | .215 |
| **H-307** | 3/8 | 3/8 | 3/8 | 1 7/16 | .076 | .164 |
| **H-98** | 5/8 | 1/4 | 7/16 | 1 1/8 | .077 | .148 |
| **H-679** | 1/2 | 5/16 | 7/16 | 1 1/8 | .077 | .155 |
| **H-342** | 1/2 | 1/2 | 5/16 | 1 | .078 | .262 |
| **+H-2** | 3/4 | 3/16 | 1/2 | 1 1/8 | .08 | .13 |
| **H-677** | 3/8 | 3/8 | 1/2 | 1 1/8 | .08 | .151 |
| **H-197** | 1/2 | 3/8 | 3/8 | 1 1/8 | .08 | .189 |
| **+H-407** | 3/4 | 1/4 | 3/8 | 1 1/8 | .08 | .172 |
| **+H-251** | 1/2 | 6/16 | 7/16 | 1 3/16 | .081 | .16 |
| **H-446** | 1/2 | 3/8 | 7/16 | 1 | .082 | .183 |
| **+H-40** | 1/2 | 1/4 | 1/2 | 1 5/16 | .083 | .134 |
| **+H-217** | 1/2 | 3/8 | 3/8 | 1 3/16 | .084 | .195 |
| **+H-553** | 7/8 | 6/16 | 5/16 | 1 | .085 | .24 |
| **H-356** | 5/8 | 9/32 | 7/16 | 1 1/8 | .087 | .171 |
| **H-140** | 5/8 | 1/4 | 1/2 | 1 1/8 | .088 | .148 |
| **H-364** | 1/2 | 6/16 | 1/2 | 1 1/8 | .088 | .16 |
| **H-567** | 1/2 | 11/32 | 7/16 | 1 3/16 | .089 | .181 |
| **+H-380** | 7/8 | 1/4 | 3/8 | 1 1/8 | .092 | .20 |
| **H-622** | 3/4 | 6/16 | 7/16 | 16/16 | .096 | .211 |
| **+H-201** | 1/2 | 3/8 | 3/8 | 1 3/8 | .098 | .212 |
| **H-678** | 1/2 | 5/16 | 9/16 | 1 1/8 | .099 | .164 |
| **H-111** | 1/2 | 1/2 | 3/8 | 1 1/16 | .10 | .269 |
| **+H-252** | 5/8 | 5/16 | 7/16 | 1 3/16 | .101 | .20 |
| **+H-41** | 5/8 | 1/4 | 1/2 | 1 5/16 | .102 | .167 |
| **+H-108** | 5/8 | 3/8 | 3/8 | 1 3/16 | .105 | .244 |
| **+H-3** | 3/4 | 1/4 | 1/2 | 1 1/8 | .106 | .183 |
| **H-174** | 3/8 | 1/2 | 1/2 | 1 1/8 | .106 | .219 |
| **+H-187** | 1/2 | 3/8 | 1/2 | 1 1/8 | .106 | .202 |
| **H-621** | 1 1/8 | 5/16 | 11/32 | 7/8 | .106 | .298 |
| **H-180** | 5/8 | 5/16 | 1/2 | 1 1/8 | .11 | .20 |
| **+H-43** | 3/8 | 5/16 | 5/8 | 1 9/16 | .114 | .157 |
| **H-404** | 5/8 | 3/8 | 1/2 | 1 | .117 | .237 |
| **H-385** | 3/4 | 1/4 | 1/2 | 1 1/4 | .118 | .196 |
| **H-261** | 5/8 | 3/8 | 3/8 | 1 3/8 | .121 | .266 |
| **+H-328** | 3/4 | 11/32 | 3/8 | 1 1/4 | .121 | .271 |
| **+H-554** | 7/8 | 5/16 | 3/8 | 1 3/16 | .121 | .274 |
| **+H-42** | 3/4 | 1/4 | 1/2 | 1 5/16 | .123 | .201 |
| **+H-269** | 1/2 | 3/8 | 1/2 | 1 5/16 | .123 | .218 |

**+ preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 4 mil series H

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| H-270 | ½ | 7/16 | ½ | 1⅛ | .124 | .245 |
| H-327 | ⅞ | 3/16 | ½ | 1½ | .125 | .183 |
| +H-361 | ¾ | ⅜ | ⅜ | 1 3/16 | .125 | .293 |
| H-519 | ⅝ | ⅜ | ⅜ | 1 7/16 | .126 | .273 |
| H-637 | 1 | ¾ | ¾ | 2 5/16 | .13 | 1.60 |
| H-160 | ⅝ | ⅜ | ½ | 1⅛ | .132 | .252 |
| +H-391 | ⅜ | ⅜ | ⅝ | 1½ | .132 | .186 |
| H-674 | 1 | 3/16 | ⅝ | 1⅛ | .132 | .185 |
| H-173 | ½ | ½ | ½ | 1 1/16 | .133 | .284 |
| H-316 | ⅜ | ⅜ | ⅝ | 1 9/16 | .137 | .19 |
| +H-484 | 1¼ | ¼ | ⅜ | 1 3/16 | .139 | .297 |
| +H-138 | ½ | ½ | ½ | 1⅛ | .141 | .293 |
| H-169 | ½ | ⅜ | ½ | 1½ | .141 | .237 |
| +H-4 | ⅞ | 7/32 | ½ | 1½ | .144 | .218 |
| H-157 | 1¼ | ⅜ | 5/16 | 1 | .146 | .431 |
| H-405 | ⅝ | ⅜ | ½ | 1¼ | .146 | .266 |
| H-176 | ⅜ | ½ | ½ | 1 9/16 | .147 | .26 |
| +H-304 | ⅝ | 5/16 | ½ | 1½ | .147 | .237 |
| H-124 | ⅞ | ¼ | 7/16 | 1 9/16 | .15 | .254 |
| +H-9 | ⅜ | ¼ | ⅝ | 1 9/16 | .153 | .196 |
| +H-44 | ½ | 5/16 | ⅝ | 1 9/16 | .153 | .204 |
| +H-253 | ⅝ | ⅜ | ½ | 1 5/16 | .154 | .273 |
| H-127 | ½ | ⅜ | ⅝ | 1 5/16 | .155 | .23 |
| +H-310 | ¾ | ⅜ | ½ | 1⅛ | .159 | .303 |
| H-318 | 1 | ¼ | ½ | 1 5/16 | .164 | .268 |
| H-109 | ¾ | ½ | ½ | ⅞ | .165 | .392 |
| H-149 | ⅝ | 9/32 | ⅝ | 1 9/16 | .172 | .225 |
| H-584 | ⅞ | ¼ | ½ | 1 9/16 | .172 | .261 |
| H-202 | ⅝ | ⅜ | ½ | 1½ | .176 | .296 |
| H-290 | ½ | 9/16 | ½ | 1¼ | .176 | .361 |
| +H-175 | ⅝ | ½ | ½ | 1⅛ | .177 | .366 |
| H-457 | ⅞ | 5/16 | ½ | 1 5/16 | .18 | .305 |
| H-434 | ½ | ¼ | ¾ | 1 15/16 | .182 | .188 |
| H-383 | ¾ | 5/16 | ½ | 1 9/16 | .183 | .29 |
| H-374 | ¾ | ¼ | ⅝ | 1 9/16 | .184 | .257 |
| +H-254 | ¾ | ⅜ | ½ | 1 5/16 | .185 | .328 |
| +H-5 | 1 | ¼ | ½ | 1½ | .188 | .291 |
| H-279 | ½ | ½ | ½ | 1½ | .188 | .34 |
| +H-464 | 1 | ½ | ⅜ | 1 | .188 | .523 |
| +H-555 | 1⅛ | ⅜ | ⅜ | 1 3/16 | .188 | .441 |
| +H-45 | ⅝ | 5/16 | ⅝ | 1 9/16 | .191 | .254 |
| H-308 | ⅝ | ⅜ | ⅝ | 1 5/16 | .192 | .287 |
| +H-183 | ½ | ½ | ½ | 1 9/16 | .195 | .346 |
| H-104 | ¾ | ⅜ | ⅝ | 1⅛ | .198 | .319 |
| H-326 | ¾ | 11/32 | ½ | 1 9/16 | .201 | .326 |
| H-377 | ⅝ | ⅜ | ⅝ | 1⅜ | .201 | .295 |
| H-335 | ½ | ½ | ½ | 1⅝ | .203 | .355 |
| H-683 | 1 | ¼ | 9/16 | 1 7/16 | .203 | .303 |
| +H-49 | ⅜ | ⅜ | ¾ | 1 15/16 | .205 | .225 |
| +H-381 | ⅞ | 7/16 | ⅜ | 1 7/16 | .205 | .465 |

## 4 mil series H

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| H-101 | 1 | ¼ | ½ | 1 11/16 | .211 | .314 |
| H-216 | ¾ | ⅜ | ½ | 1½ | .212 | .354 |
| H-351 | ¾ | ½ | ½ | 1⅛ | .212 | .439 |
| H-189 | 1⅛ | ¼ | ½ | 1 9/16 | .22 | .336 |
| +H-245 | ¾ | ⅜ | ½ | 1 9/16 | .22 | .363 |
| H-428 | ¾ | ⅜ | ⅝ | 1¼ | .22 | .337 |
| H-243 | ⅝ | ⅝ | ½ | 1⅛ | .221 | .495 |
| +H-46 | ¾ | 5/16 | ⅝ | 1 9/16 | .228 | .306 |
| H-214 | 1 | 9/32 | ½ | 1⅝ | .229 | .351 |
| H-424 | ¾ | ¼ | ⅝ | 1 15/16 | .229 | .271 |
| H-230 | 1 | ¼ | ½ | 1⅞ | .234 | .338 |
| H-345 | 1 | 5/16 | ½ | 1½ | .234 | .378 |
| H-103 | ⅝ | 5/16 | ⅝ | 1 15/16 | .236 | .29 |
| H-277 | 1 | 5/16 | ½ | 1 9/16 | .244 | .387 |
| H-338 | 1 | ¼ | ⅝ | 1 9/16 | .244 | .314 |
| H-177 | ⅝ | ½ | ½ | 1 9/16 | .245 | .434 |
| H-186 | 1¼ | ¼ | ½ | 1 9/16 | .245 | .373 |
| +H-105 | ¾ | ⅜ | ¾ | 1 3/16 | .251 | .345 |
| +H-129 | ⅞ | 7/16 | ½ | 1 5/16 | .251 | .466 |
| H-282 | ⅝ | ½ | ⅝ | 1 5/16 | .257 | .413 |
| H-631 | ⅝ | 7/16 | ½ | 1⅞ | .257 | .402 |
| H-158 | 1 | ⅜ | 5/16 | 2¼ | .263 | .566 |
| H-348 | 1 | ⅜ | 9/16 | 1¼ | .264 | .436 |
| +H-47 | ⅞ | 5/16 | ⅝ | 1 9/16 | .267 | .356 |
| H-314 | 1⅛ | ¼ | 9/16 | 1 11/16 | .267 | .363 |
| H-190 | ½ | ⅜ | ⅞ | 1⅝ | .268 | .283 |
| +H-50 | ½ | ⅜ | ¾ | 1 15/16 | .273 | .30 |
| +H-11 | 1 | 9/32 | ⅝ | 1 9/16 | .275 | .361 |
| +H-556 | 1⅛ | ⅜ | ½ | 1 5/16 | .277 | .493 |
| +H-408 | ⅞ | 7/16 | 7/16 | 1 11/16 | .282 | .525 |
| H-663 | ⅞ | 7/16 | ½ | 1½ | .288 | .50 |
| +H-6 | ¾ | ½ | ½ | 1 9/16 | .294 | .52 |
| +H-7 | 1 | ⅜ | ½ | 1 9/16 | .294 | .483 |
| +H-409 | ⅞ | 13/32 | 7/16 | 1 15/16 | .30 | .523 |
| H-179 | 1⅜ | 9/32 | ½ | 1 9/16 | .301 | .471 |
| +H-48 | 1 | 5/16 | ⅝ | 1 9/16 | .305 | .406 |
| H-219 | ⅝ | ⅝ | ⅝ | 1¼ | .305 | .543 |
| H-668 | 1 1/16 | 13/32 | ⅝ | 1¾ | .305 | .409 |
| H-171 | ⅝ | ½ | ⅝ | 1 9/16 | .306 | .452 |
| H-585 | ¾ | ½ | ⅝ | 1 5/16 | .307 | .496 |
| H-152 | ½ | 7/16 | 13/16 | 1¾ | .312 | .347 |
| H-349 | 1 | 13/32 | ⅝ | 1¼ | .318 | .497 |
| H-371 | ⅞ | ⅜ | ⅝ | 1 9/16 | .32 | .443 |
| +H-376 | 1 | 7/16 | 7/16 | 1 11/16 | .322 | .60 |
| H-675 | 1¼ | ⅜ | ½ | 1⅜ | .323 | .56 |
| H-200 | 1 | ⅜ | ½ | 1¾ | .329 | .519 |
| H-51 | ⅝ | ⅜ | ¾ | 1 15/16 | .341 | .375 |
| H-117 | ⅝ | 9/16 | ⅝ | 1 9/16 | .342 | .527 |
| +H-403 | ⅞ | ½ | ½ | 1 9/16 | .342 | .607 |
| +H-379 | 1 | 13/32 | 7/16 | 1 15/16 | .343 | .598 |

+ **preferred core sizes**: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46·700.

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| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series H** | | | | | | |
| H-632 | ¾ | ⅜ | ⅝ | 1 15/16 | .343 | .428 |
| +H-557 | 1¼ | 7/16 | ½ | 15/16 | .358 | .664 |
| H-100 | 1 | ⅜ | ⅝ | 1 9/16 | .366 | .506 |
| +H-255 | ¾ | ½ | ⅝ | 1 9/16 | .366 | .543 |
| H-510 | 1 | 15/32 | ½ | 1 9/16 | .367 | .637 |
| +H-14 | 1⅛ | 5/16 | ⅝ | 1 11/16 | .37 | .479 |
| +H-372 | ⅞ | 7/16 | ⅝ | 1 9/16 | .373 | .536 |
| +H-223 | 1 | ½ | ½ | 1½ | .375 | .679 |
| H-161 | ⅝ | ⅝ | ⅝ | 1 9/16 | .381 | .604 |
| H-384 | 1¼ | 5/16 | ⅝ | 1 9/16 | .381 | .509 |
| +H-8 | 1 | ½ | ½ | 1 9/16 | .391 | .694 |
| H-260 | ⅝ | ⅝ | 1 | 1 | .391 | .568 |
| H-102 | 1⅛ | 23/64 | ⅝ | 1 9/16 | .395 | .543 |
| H-208 | 1⅛ | ⅝ | ½ | 1⅛ | .396 | .892 |
| H-386 | ¾ | ⅜ | ¾ | 1⅞ | .396 | .441 |
| H-681 | 1¼ | ⅜ | ⅜ | 2¼ | .396 | .724 |
| H-191 | ½ | ⅜ | 1⅛ | 1⅞ | .398 | .329 |
| H-600 | 1¼ | ⅝ | ⅜ | 1⅜ | .403 | 1.03 |
| H-52 | ¾ | ⅜ | ¾ | 1 15/16 | .409 | .45 |
| H-340 | 1 | 7/16 | ⅜ | 2½ | .41 | .749 |
| H-226 | ¾ | ⅜ | 13/16 | 1 13/16 | .413 | .441 |
| H-280 | ¾ | ½ | ¾ | 1½ | .422 | .555 |
| H-57 | ½ | 7/16 | ⅞ | 2¼ | .432 | .403 |
| H-205 | 1¼ | 23/64 | ⅝ | 1 9/16 | .439 | .601 |
| H-303 | 1 | 9/16 | ½ | 1 9/16 | .439 | .808 |
| H-178 | 1½ | ⅜ | ½ | 1 9/16 | .44 | .725 |
| H-333 | ¾ | ½ | 7/16 | 2¾ | .451 | .72 |
| H-362 | 1 | 5/16 | ¾ | 1 15/16 | .453 | .485 |
| +H-478 | 1 | ⅜ | ⅝ | 1 15/16 | .453 | .577 |
| H-306 | 1 | 7/16 | ⅝ | 1 11/16 | .461 | .64 |
| +H-387 | ⅞ | ⅜ | ¾ | 1⅞ | .461 | .514 |
| H-107 | 1⅛ | ⅜ | ⅝ | 1¾ | .462 | .611 |
| H-292 | 1¼ | 5/16 | ⅝ | 1 15/16 | .473 | .582 |
| H-53 | ⅞ | ⅜ | ¾ | 1 15/16 | .477 | .524 |
| H-353 | 1 | 7/16 | ⅝ | 1¾ | .478 | .655 |
| H-435 | ½ | ⅜ | 1 | 2 8/16 | .482 | .376 |
| +H-12 | 1 | ½ | ⅝ | 1 9/16 | .489 | .724 |
| H-401 | 1¼ | ½ | ½ | 1 9/16 | .489 | .868 |
| H-482 | ½ | ½ | ⅞ | 2¼ | .493 | .472 |
| H-496 | 1¼ | ⅜ | ⅝ | 1 11/16 | .495 | .661 |
| H-118 | ¾ | ¾ | ¾ | 1 3/16 | .501 | .855 |
| +H-300 | 1 | ⅜ | ¾ | 1 13/16 | .509 | .576 |
| H-339 | 1 | 7/16 | ⅝ | 1⅞ | .512 | .68 |
| H-494 | ⅝ | ½ | 1 1/16 | 1 9/16 | .519 | .52 |
| H-136 | ⅞ | 9/16 | ⅝ | 1 11/16 | .52 | .768 |
| H-474 | ⅝ | ½ | 1 9/16 | 1 1/16 | .52 | .537 |
| H-159 | 1 | ⅝ | ⅜ | 2¼ | .527 | 1.083 |
| H-209 | 1 | 7/16 | ⅝ | 1 15/16 | .529 | .695 |
| H-196 | 1 | 11/32 | ¾ | 2 1/16 | .532 | .553 |
| +H-10 | ⅞ | ⅝ | ⅝ | 1 9/16 | .534 | .846 |

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series H** | | | | | | |
| H-58 | ⅝ | 7/16 | ⅞ | 2¼ | .538 | .503 |
| +H-54 | 1 | ⅜ | ¾ | 1 15/16 | .544 | .599 |
| H-458 | 1½ | ⅜ | ⅝ | 1 9/16 | .55 | .76 |
| H-350 | 1 | ½ | 11/16 | 1⅝ | .559 | .755 |
| H-237 | 1⅛ | 9/16 | ¾ | 1 3/16 | .563 | .869 |
| +H-558 | 1½ | ½ | ½ | 1½ | .563 | 1.013 |
| H-618 | 1 | ½ | ½ | 2¼ | .563 | .861 |
| +H-17 | 1¼ | ⅜ | ⅝ | 1 15/16 | .568 | .722 |
| H-512 | ¾ | ⅝ | ⅝ | 1 15/16 | .568 | .81 |
| H-257 | ¾ | 9/16 | ¾ | 1 13/16 | .574 | .711 |
| H-168 | 1 | ⅜ | ¾ | 2 1/16 | .579 | .613 |
| H-151 | 1 | 15/32 | ½ | 2½ | .588 | .845 |
| H-331 | ⅝ | ⅝ | ½ | 3 | .588 | .849 |
| +H-369 | 1⅛ | 7/16 | 11/16 | 1¾ | .592 | .72 |
| H-357 | 1⅛ | 7/16 | ⅝ | 1 15/16 | .597 | .781 |
| +H-411 | ⅞ | 7/16 | ⅝ | 2½ | .598 | .704 |
| +H-224 | 1⅛ | 8/16 | 8/16 | 1 11/16 | .599 | .97 |
| H-341 | 1 | ½ | ⅝ | 1 15/16 | .606 | .818 |
| H-206 | 1½ | ½ | 13/32 | 2 | .61 | 1.319 |
| +H-13 | 1 | ⅝ | ⅝ | 1 9/16 | .611 | .966 |
| H-55 | 1⅛ | ⅜ | ¾ | 1 15/16 | .614 | .675 |
| H-296 | ⅞ | ⅜ | ¾ | 2½ | .615 | .609 |
| H-135 | ⅞ | ⅝ | 11/16 | 1 11/16 | .635 | .897 |
| H-112 | ¾ | ⅝ | ¾ | 1 13/16 | .638 | .813 |
| H-65 | ½ | ½ | 1 | 2 9/16 | .641 | .527 |
| H-59 | ¾ | 7/16 | ⅞ | 2¼ | .646 | .604 |
| H-120 | 1 | ⅜ | ¾ | 2 5/16 | .65 | .66 |
| +H-20 | 1¼ | 5/16 | ¾ | 2 5/16 | .677 | .668 |
| +H-56 | 1¼ | ⅜ | ¾ | 1 15/16 | .682 | .751 |
| H-212 | 1½ | ⅜ | ⅝ | 1 15/16 | .682 | .864 |
| H-312 | ¾ | ¾ | ⅝ | 1 15/16 | .682 | 1.03 |
| H-395 | ¾ | ⅝ | ¾ | 1 15/16 | .682 | .841 |
| H-572 | 1 | ½ | ¾ | 1 15/16 | .726 | .848 |
| H-119 | 1⅜ | ⅜ | 11/16 | 2 1/16 | .732 | .825 |
| H-162 | 1½ | ½ | ⅝ | 1 8/16 | .733 | 1.086 |
| H-60 | ⅞ | 7/16 | ⅞ | 2¼ | .752 | .704 |
| +H-15 | 1 | ⅝ | ⅝ | 1 15/16 | .757 | 1.082 |
| H-479 | 1¼ | ½ | ⅝ | 1 15/16 | .757 | 1.019 |
| H-323 | ⅞ | 7/16 | 1 | 2 | .764 | .691 |
| H-24 | ⅞ | ⅜ | 15/16 | ¼ | .768 | .638 |
| +H-410 | 1⅛ | 7/16 | ⅝ | ¼ | .77 | .906 |
| H-132 | 1 | ⅜ | 1 3/16 | 1¾ | .781 | .65 |
| H-388 | 1½ | ⅜ | ¾ | 1⅞ | .791 | .885 |
| H-66 | ⅝ | ½ | 1 | 2 9/16 | .802 | .659 |
| H-673 | ⅞ | 9/16 | ⅞ | 1⅞ | .808 | .865 |
| H-131 | 1¼ | ⅜ | ¾ | 2 5/16 | .814 | .825 |
| +H-370 | 1⅛ | ½ | ¾ | 1 15/16 | .817 | .954 |
| H-602 | 1½ | ⅜ | ¾ | 1 15/16 | .817 | .898 |
| H-355 | 1 | 11/16 | 11/16 | 1¾ | .828 | 1.14 |
| +H-16 | 1⅛ | ⅝ | ⅝ | 1 15/16 | .85 | 1.219 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 4 mil series H

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| H-236 | 1⅜ | 7/16 | 11/16 | 2 1/16 | .852 | .997 |
| H-305 | 1⅛ | 7/16 | ¾ | 2 5/16 | .853 | .89 |
| +H-61 | 1 | 7/16 | ⅞ | 2¼ | .86 | .805 |
| +H-559 | 1⅝ | 9/16 | 9/16 | 1 11/16 | .866 | 1.389 |
| H-232 | 1 | ½ | ¾ | 2 5/16 | .867 | .929 |
| H-239 | 1 | ⅝ | ¾ | 1 15/16 | .908 | 1.12 |
| H-265 | 1 | ¾ | ⅝ | 1 15/16 | .908 | 1.375 |
| H-436 | ¾ | ⅜ | 1⅛ | 2⅞ | .909 | .626 |
| H-143 | ⅞ | ⅜ | 15/16 | 3 | .921 | .72 |
| +H-413 | 1⅛ | 17/32 | ⅝ | 2½ | .933 | 1.14 |
| H-612 | 2 | ½ | ½ | 1⅞ | .938 | 1.33 |
| H-397 | 1 | ½ | ⅝ | 3 | .939 | 1.07 |
| H-123 | 1⅜ | 13/32 | ¾ | 2¼ | .943 | .978 |
| +H-18 | 1¼ | ⅝ | ⅝ | 1 15/16 | .945 | 1.353 |
| H-302 | ⅞ | ⅝ | ¾ | 2 5/16 | .948 | 1.077 |
| H-455 | ⅞ | ¾ | ¾ | 1 15/16 | .953 | 1.242 |
| H-67 | ¾ | ½ | 1 | 2 9/16 | .961 | 1.791 |
| H-150 | 1⅜ | 13/32 | ¾ | 2 5/16 | .969 | .997 |
| H-62 | 1⅛ | 7/16 | ⅞ | 2¼ | .97 | .907 |
| +H-22 | 1½ | ⅜ | ¾ | 2 5/16 | .976 | .989 |
| H-170 | ¾ | ¾ | ¾ | 2 5/16 | .976 | 1.153 |
| H-134 | ⅞ | ⅝ | 1 1/16 | 1 11/16 | .981 | 1.00 |
| H-301 | ⅞ | ⅜ | 1 | 3 | .984 | .73 |
| H-272 | 1 | ½ | ⅞ | 2¼ | .986 | .945 |
| H-352 | 1⅛ | ⅝ | ⅝ | 2¼ | .988 | 1.31 |
| H-613 | 1⅛ | 9/16 | 13/16 | 1 15/16 | .996 | 1.84 |
| H-680 | 1¼ | ½ | 13/16 | 2 | 1.02 | 1.10 |
| H-491 | 1½ | 9/16 | ⅝ | 1 15/16 | 1.021 | 1.42 |
| +H-412 | 1¼ | 17/32 | ⅝ | 2½ | 1.038 | 1.222 |
| H-429 | 1 | ½ | 1 3/16 | 1¾ | 1.04 | .911 |
| H-389 | 2 | ⅜ | ¾ | 1⅞ | 1.056 | 1.183 |
| H-336 | ⅞ | ⅜ | 1 5/16 | 2½ | 1.075 | .699 |
| +H-63 | 1¼ | 7/16 | ⅞ | 2¼ | 1.076 | 1.007 |
| +H-347 | 1¼ | ½ | ¾ | 2 5/16 | 1.084 | 1.162 |
| H-537 | 1 | ⅝ | ¾ | 2 5/16 | 1.084 | 1.22 |
| +H-540 | 1⅛ | 9/16 | 13/16 | 2⅛ | 1.09 | 1.166 |
| H-605 | 2 | ⅜ | ¾ | 1 15/32 | 1.091 | 1.20 |
| H-392 | 1⅛ | 9/16 | ¾ | 2 5/16 | 1.096 | 1.207 |
| H-346 | ⅞ | ⅝ | 1 3/16 | 1 11/16 | 1.097 | 1.032 |
| H-432 | 1⅜ | 9/16 | 11/16 | 2 1/16 | 1.097 | 1.358 |
| H-68 | ⅞ | ½ | 1 | 2 9/16 | 1.122 | .922 |
| H-75 | ⅝ | 9/18 | 1⅛ | 2⅞ | 1.136 | .834 |
| H-332 | ⅞ | 7/16 | 1 | 3 | 1.146 | .873 |
| +H-35 | ¾ | ¾ | 1 3/16 | 1¾ | 1.171 | 1.135 |
| +H-64 | 1⅜ | 7/16 | ⅞ | 2¼ | 1.184 | 1.106 |
| H-259 | 1¼ | ⅝ | ⅝ | 2 7/16 | 1.189 | 1.525 |
| H-366 | 1 | ¾ | ⅝ | 2 9/16 | 1.202 | 1.58 |
| H-153 | 1¼ | 9/16 | ¾ | 2 5/16 | 1.218 | 1.343 |
| H-502 | 1½ | ⅝ | ⅞ | 1½ | 1.232 | 1.536 |
| H-133 | ¾ | ¾ | 1¼ | 1 25/32 | 1.254 | 1.16 |

## 4 mil series H

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| H-241 | ¾ | 13/32 | 1⅜ | 3 | 1.257 | .741 |
| H-69 | 1 | ½ | 1 | 2 9/16 | 1.281 | 1.054 |
| +H-415 | 1¼ | ⅝ | ⅝ | 2⅝ | 1.281 | 1.60 |
| +H-27 | 1½ | ⅜ | 15/16 | 2½ | 1.32 | 1.096 |
| H-181 | ¾ | ¾ | 15/16 | 2½ | 1.32 | 1.261 |
| H-146 | 1¾ | ⅝ | ⅝ | 1 15/16 | 1.325 | 1.892 |
| +H-534 | 1⅜ | 11/16 | 11/16 | 2 1/16 | 1.342 | 1.75 |
| H-289 | 1⅛ | 11/16 | ¾ | 2 5/16 | 1.343 | 1.552 |
| H-76 | ¾ | 9/16 | 1⅛ | 2⅞ | 1.366 | 1.001 |
| H-571 | 1 | ⅝ | ⅝ | 3½ | 1.369 | 1.55 |
| H-266 | 1⅛ | ⅝ | ⅞ | 2¼ | 1.384 | 1.397 |
| H-164 | 1⅜ | 23/32 | 11/16 | 2 1/16 | 1.402 | 1.853 |
| +H-414 | 1⅜ | ⅝ | ⅝ | 2⅝ | 1.41 | 1.756 |
| H-141 | 1⅛ | 15/32 | 1⅛ | 2⅜ | 1.411 | 1.084 |
| H-154 | 1⅜ | 19/32 | ¾ | 2 5/16 | 1.417 | 1.579 |
| +H-560 | 1⅞ | ⅝ | ⅝ | 1 15/16 | 1.42 | 2.019 |
| H-354 | 1¼ | 9/16 | ⅞ | 2 5/16 | 1.422 | 1.385 |
| H-70 | 1⅛ | ½ | 1 | 2 9/16 | 1.442 | 1.184 |
| H-471 | 1¼ | 9/16 | ¾ | 2¾ | 1.449 | 1.494 |
| H-263 | 1⅜ | ¾ | 11/16 | 2 1/16 | 1.462 | 1.959 |
| +H-19 | 1⅛ | ¾ | ¾ | 2 5/18 | 1.463 | 1.736 |
| +H-26 | 1¼ | ½ | 15/16 | 2½ | 1.465 | 1.278 |
| H-604 | 1⅝ | ⅝ | ¾ | 1 15/16 | 1.476 | 1.80 |
| H-399 | 1 | ¾ | ¾ | 2⅝ | 1.478 | 1.65 |
| H-437 | ¾ | ½ | 1¼ | 3 3/16 | 1.495 | .954 |
| H-334 | 1 | ½ | 1½ | 2 | 1.50 | 1.05 |
| H-390 | 1 | ½ | 1 | 3 | 1.50 | 1.162 |
| H-113 | 1¾ | ½ | ¾ | 2 5/18 | 1.517 | 1.625 |
| H-220 | 1¾ | ⅜ | 15/16 | 2½ | 1.538 | 1.28 |
| H-322 | 1¼ | ⅞ | ⅝ | 2¼ | 1.539 | 2.386 |
| H-228 | 1½ | 19/32 | ¾ | 2 5/16 | 1.544 | 1.718 |
| +H-86 | ⅝ | ⅝ | 1¼ | 3 3/16 | 1.559 | 1.03 |
| H-449 | 1⅜ | 9/16 | ⅞ | 2 5/16 | 1.563 | 1.533 |
| H-142 | 1⅛ | 15/32 | 1 3/16 | 2½ | 1.568 | 1.13 |
| +H-541 | 1¼ | ⅝ | ⅞ | 2 5/16 | 1.579 | 1.577 |
| H-295 | 1¼ | 13/18 | ⅝ | 2½ | 1.585 | 2.163 |
| H-77 | ⅞ | 9/16 | 1⅛ | 2⅞ | 1.593 | 1.166 |
| H-71 | 1¼ | ½ | 1 | 2 9/16 | 1.601 | 1.317 |
| H-248 | 1½ | ⅝ | ¾ | 2 5/16 | 1.628 | 1.833 |
| H-313 | 1⅜ | 19/32 | 13/16 | 2½ | 1.658 | 1.675 |
| H-293 | 1⅛ | ¾ | ¾ | 2¾ | 1.741 | 1.916 |
| +H-28 | 1½ | ½ | 15/16 | 2½ | 1.758 | 1.533 |
| H-221 | 2 | ⅜ | 15/16 | 2½ | 1.758 | 1.46 |
| H-72 | 1⅜ | ½ | 1 | 2 9/16 | 1.763 | 1.447 |
| +H-21 | 1⅜ | ¾ | ¾ | 2 5/16 | 1.787 | 2.115 |
| H-489 | 1⅛ | ¾ | 1 | 2⅛ | 1.794 | 1.75 |
| H-467 | 1⅛ | ⅝ | 1 | 2 9/16 | 1.801 | 1.55 |
| H-309 | 1⅜ | 9/16 | 15/16 | 2½ | 1.81 | 1.62 |
| H-431 | 1½ | ⅝ | 15/16 | 2 1/16 | 1.812 | 1.804 |
| H-78 | 1 | 9/16 | 1⅛ | 2⅞ | 1.817 | 1.334 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

Pg 17



| catalog number | dimensions in inches: strip width D | build up E | win-dow width F | win-dow length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series H** | | | | | | |
| H-325 | 1 | 25/32 | 15/16 | 2 1/2 | 1.83 | 1.77 |
| H-204 | 1 3/8 | 3/4 | 3/4 | 2 3/8 | 1.836 | 2.144 |
| H-87 | 3/4 | 5/8 | 1 1/4 | 3 3/16 | 1.868 | 1.237 |
| H-472 | 1 1/2 | 17/32 | 16/16 | 2 1/2 | 1.868 | 1.649 |
| H-73 | 1 1/2 | 1/2 | 1 | 2 9/16 | 1.922 | 1.581 |
| H-211 | 1 1/2 | 9/16 | 1 | 2 5/16 | 1.949 | 1.71 |
| +H-23 | 1 1/2 | 3/4 | 3/4 | 2 5/16 | 1.951 | 2.309 |
| +H-417 | 1 3/8 | 11/16 | 11/16 | 3 | 1.953 | 1.60 |
| +H-561 | 2 | 11/16 | 11/16 | 2 1/16 | 1.953 | 2.555 |
| H-106 | 1 1/2 | 5/8 | 15/16 | 2 1/4 | 1.978 | 1.901 |
| H-267 | 1 1/8 | 3/4 | 15/16 | 2 1/2 | 1.978 | 1.892 |
| H-498 | 1 1/4 | 1/2 | 1 1/8 | 2 7/8 | 2.021 | 1.45 |
| H-79 | 1 1/8 | 9/16 | 1 1/8 | 2 7/8 | 2.044 | 1.502 |
| H-80 | 1 1/8 | 9/16 | 1 1/8 | 2 7/8 | 2.044 | 1.686 |
| H-499 | 1 1/4 | 5/8 | 3/4 | 3 1/2 | 2.051 | 1.99 |
| H-74 | 1 5/8 | 1/2 | 1 | 2 9/16 | 2.083 | 1.712 |
| H-268 | 1 | 3/4 | 7/8 | 3 1/4 | 2.132 | 1.93 |
| H-288 | 1 1/2 | 5/8 | 1 | 2 5/16 | 2.169 | 1.95 |
| H-88 | 7/8 | 5/8 | 1 1/4 | 3 3/16 | 2.181 | 1.44 |
| +H-29 | 1 1/2 | 5/8 | 15/16 | 2 1/2 | 2.198 | 2.001 |
| H-450 | 3/4 | 3/4 | 1 1/4 | 3 3/16 | 2.244 | 1.54 |
| +H-30 | 1 1/2 | 1/2 | 1 | 3 | 2.25 | 1.744 |
| H-490 | 1 1/8 | 3/4 | 1 1/8 | 2 3/8 | 2.256 | 1.91 |
| H-423 | 1 3/4 | 5/8 | 3/4 | 2 3/4 | 2.258 | 2.377 |
| H-438 | 1 | 1/2 | 1 5/16 | 3 1/2 | 2.296 | 1.363 |
| H-329 | 7/8 | 7/8 | 1 | 3 | 2.298 | 2.003 |
| +H-416 | 1 5/8 | 11/16 | 11/16 | 3 | 2.307 | 2.585 |
| H-122 | 1 1/2 | 1/2 | 1 1/4 | 2 1/2 | 2.345 | 1.65 |
| H-218 | 1 1/2 | 5/8 | 15/16 | 2 11/16 | 2.363 | 2.09 |
| +H-406 | 1 3/8 | 11/16 | 1 | 2 9/16 | 2.424 | 2.129 |
| H-271 | 1 1/2 | 3/4 | 15/16 | 2 5/16 | 2.437 | 2.41 |
| H-603 | 2 1/4 | 3/4 | 3/4 | 1 15/16 | 2.452 | 3.15 |
| H-523 | 1 7/8 | 1/2 | 3/4 | 3 1/2 | 2.464 | 2.30 |
| H-89 | 1 | 5/8 | 1 1/4 | 3 3/16 | 2.49 | 1.649 |
| H-81 | 1 3/8 | 9/16 | 1 1/8 | 2 7/8 | 2.501 | 1.833 |
| H-165 | 1 | 9/16 | 1 5/16 | 3 1/2 | 2.58 | 1.562 |
| H-394 | 1 1/2 | 1 | 3/4 | 2 5/16 | 2.601 | 3.376 |
| H-213 | 2 1/4 | 1/2 | 15/16 | 2 1/2 | 2.635 | 2.299 |
| H-500 | 1 1/2 | 3/4 | 15/16 | 2 1/2 | 2.635 | 2.516 |
| H-82 | 1 1/2 | 9/16 | 1 1/8 | 2 7/8 | 2.726 | 1.998 |
| H-225 | 1 3/4 | 5/8 | 15/16 | 2 11/16 | 2.755 | 2.444 |
| H-258 | 1 1/2 | 9/16 | 1 5/16 | 2 1/2 | 2.765 | 1.925 |
| H-90 | 1 1/8 | 5/8 | 1 1/4 | 3 3/16 | 2.802 | 1.855 |
| H-273 | 1 1/2 | 3/4 | 1 | 2 1/2 | 2.813 | 2.55 |
| +H-562 | 2 1/4 | 3/4 | 3/4 | 2 5/16 | 2.927 | 3.47 |
| H-83 | 1 5/8 | 9/16 | 1 1/8 | 2 7/8 | 2.953 | 2.168 |
| +H-419 | 1 1/2 | 3/4 | 3/4 | 3 1/2 | 2.954 | 2.973 |
| H-396 | 2 | 1/2 | 1 | 3 | 3.00 | 2.347 |
| +H-25 | 1 3/8 | 15/16 | 15/16 | 2 1/2 | 3.018 | 3.074 |
| H-91 | 1 1/4 | 5/8 | 1 1/4 | 3 3/16 | 3.111 | 2.056 |
| **4 mil series H** | | | | | | |
| +H-542 | 1 5/8 | 3/4 | 1 | 2 9/16 | 3.123 | 2.799 |
| H-84 | 1 3/4 | 9/16 | 1 1/8 | 2 7/8 | 3.183 | 2.333 |
| H-421 | 1 1/8 | 1/2 | 1 5/8 | 3 1/2 | 3.203 | 1.62 |
| H-264 | 1 3/4 | 5/8 | 1 | 3 | 3.282 | 2.638 |
| +H-188 | 1 1/2 | 3/4 | 1 | 3 | 3.375 | 2.832 |
| H-85 | 1 7/8 | 9/16 | 1 1/8 | 2 7/8 | 3.41 | 2.512 |
| H-92 | 1 3/8 | 5/8 | 1 1/4 | 3 3/16 | 3.424 | 2.27 |
| H-311 | 1 3/8 | 11/16 | 1 1/8 | 3 1/4 | 3.458 | 2.503 |
| H-242 | 1 1/2 | 15/16 | 15/16 | 2 11/16 | 3.54 | 3.482 |
| H-37 | 1 3/4 | 1/2 | 1 3/8 | 3 | 3.609 | 2.202 |
| H-344 | 1 1/4 | 1/2 | 1 1/2 | 3 7/8 | 3.635 | 1.88 |
| H-501 | 1 1/2 | 3/4 | 15/16 | 3 1/2 | 3.689 | 3.10 |
| +H-418 | 1 7/8 | 3/4 | 3/4 | 3 1/2 | 3.693 | 3.715 |
| H-505 | 1 1/4 | 3/4 | 15/16 | 4 1/4 | 3.736 | 2.90 |
| H-93 | 1 1/2 | 5/8 | 1 1/4 | 3 3/16 | 3.74 | 2.474 |
| H-128 | 2 | 1/2 | 1 1/4 | 3 | 3.75 | 2.444 |
| +H-36 | 1 3/8 | 5/8 | 1 5/16 | 3 1/2 | 3.945 | 2.425 |
| H-94 | 1 5/8 | 5/8 | 1 1/4 | 3 3/16 | 4.049 | 2.677 |
| +H-563 | 2 1/2 | 13/16 | 13/16 | 2 1/2 | 4.12 | 4.525 |
| H-337 | 1 1/4 | 5/8 | 1 3/8 | 3 7/8 | 4.162 | 2.377 |
| H-493 | 2 1/4 | 5/8 | 1 | 3 | 4.218 | 3.40 |
| H-439 | 1 | 5/8 | 1 5/8 | 4 3/16 | 4.255 | 2.076 |
| H-291 | 1 3/4 | 3/4 | 15/16 | 3 1/2 | 4.305 | 3.589 |
| +H-95 | 1 3/4 | 5/8 | 1 1/4 | 3 3/16 | 4.361 | 2.881 |
| +H-31 | 1 1/2 | 1 | 1 | 3 | 4.50 | 4.074 |
| H-492 | 2 | 3/4 | 1 | 3 | 4.50 | 3.77 |
| +H-543 | 1 3/4 | 13/16 | 1 1/8 | 2 7/8 | 4.597 | 3.65 |
| H-503 | 1 1/2 | 3/4 | 1 3/8 | 3 | 4.641 | 3.04 |
| H-96 | 1 7/8 | 5/8 | 1 1/4 | 3 3/16 | 4.67 | 3.085 |
| H-294 | 1 1/8 | 3/4 | 1 9/16 | 3 9/16 | 4.695 | 2.595 |
| H-441 | 1 3/8 | 3/4 | 1 5/16 | 3 1/2 | 4.736 | 3.017 |
| H-192 | 1 3/4 | 3/4 | 1 1/8 | 3 1/4 | 4.80 | 3.54 |
| H-227 | 2 1/4 | 3/4 | 1 | 2 7/8 | 4.853 | 4.13 |
| H-422 | 1 3/8 | 5/8 | 1 3/8 | 4 1/8 | 4.872 | 2.72 |
| H-32 | 1 5/8 | 1 | 1 | 3 | 4.875 | 4.414 |
| H-617 | 2 1/2 | 7/16 | 1 | 4 1/2 | 4.91 | 3.32 |
| H-451 | 1 1/2 | 1 | 1 5/16 | 2 1/2 | 4.92 | 3.929 |
| H-97 | 2 | 5/8 | 1 1/4 | 3 3/16 | 4.983 | 3.298 |
| H-486 | 1 1/8 | 1 1/8 | 1 1/4 | 3 3/16 | 5.047 | 3.83 |
| H-420 | 1 5/8 | 5/8 | 1 3/8 | 3 5/8 | 5.064 | 2.964 |
| +H-33 | 1 3/4 | 1 | 1 | 3 | 5.25 | 4.753 |
| H-330 | 1 1/2 | 1 | 1 | 3 1/2 | 5.25 | 4.44 |
| H-195 | 1 1/2 | 3/4 | 1 9/16 | 3 | 5.271 | 3.14 |
| H-440 | 1 1/4 | 5/8 | 1 5/8 | 4 3/16 | 5.315 | 2.59 |
| H-460 | 1 5/8 | 13/16 | 1 3/8 | 3 | 5.445 | 3.628 |
| H-274 | 2 1/4 | 27/32 | 1 | 3 | 5.697 | 4.92 |
| H-324 | 1 3/8 | 3/4 | 1 9/16 | 3 9/16 | 5.735 | 3.172 |
| H-426 | 1 1/4 | 7/8 | 1 3/8 | 3 7/8 | 5.828 | 3.541 |
| +H-564 | 2 1/2 | 15/16 | 15/16 | 2 11/16 | 5.90 | 5.78 |
| H-565 | 2 | 3/4 | 1 1/4 | 3 3/16 | 5.978 | 4.11 |

**+ preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

Pg. 18

| catalog number | dimensions in inches | | | | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| | strip width D | build up E | win-dow width F | win-dow length G | | |
| **4 mil series H** | | | | | | |
| H-147 | 1½ | ¾ | 1⅜ | 3⅞ | 5.995 | 3.531 |
| ✚H-34 | 2 | 1 | 1 | 3 | 6.00 | 5.432 |
| ✚H-155 | 2 | ¾ | 1⅜ | 3 | 6.189 | 4.05 |
| ✚H-358 | 1⅜ | 1 | 1⁵⁄₁₆ | 3½ | 6.314 | 4.287 |
| H-198 | 1¾ | ⅞ | 1⅜ | 3 | 6.315 | 4.278 |
| H-524 | 2¼ | 1 | 1 | 3 | 6.75 | 6.10 |
| H-184 | 2 | ⅝ | 1⅝ | 3⅜ | 6.855 | 3.65 |
| H-443 | 1½ | 1 | 1⁵⁄₁₆ | 3½ | 6.888 | 4.675 |
| ✚H-544 | 1¾ | ⅞ | 1⁵⁄₁₆ | 3½ | 7.032 | 4.62 |
| H-535 | 2¼ | ¹³⁄₁₆ | 1⅜ | 3 | 7.536 | 5.02 |
| H-373 | 2 | ²⁵⁄₃₂ | 1⁷⁄₁₆ | 3⁷⁄₁₈ | 7.716 | 4.656 |
| H-454 | 2½ | 1 | 1¹⁄₁₆ | 3 | 7.965 | 6.85 |
| H-461 | 2 | 1 | 1⅜ | 3 | 8.25 | 5.791 |
| H-182 | 2½ | ²⁹⁄₃₂ | 1³⁄₁₆ | 3⅛ | 8.409 | 6.35 |
| H-393 | 2¼ | 1¼ | 1 | 3 | 8.439 | 8.187 |
| H-427 | 1½ | 1⅜ | 1⅜ | 3 | 8.511 | 6.606 |
| H-130 | 2 | ²³⁄₃₂ | 1⁷⁄₁₆ | 4⅛ | 8.522 | 4.69 |
| H-167 | 1 | 1⁵⁄₁₆ | 1½ | 4½ | 8.856 | 5.19 |
| H-506 | 2⅛ | ¾ | 1⁹⁄₁₆ | 3⁹⁄₁₆ | 8.869 | 4.90 |
| H-497 | 2 | 1 | 1⁷⁄₁₆ | 3⁷⁄₁₆ | 9.878 | 6.29 |
| ✚H-545 | 2 | 1 | 1⅜ | 3⅝ | 9.969 | 6.41 |
| H-400 | 2½ | ¾ | 1⅜ | 3⅞ | 9.99 | 5.893 |
| H-256 | 2½ | 1 | 1 | 4 | 10.00 | 8.00 |
| H-616 | 2½ | ⁷⁄₁₆ | 2 | 4¹¹⁄₁₆ | 10.20 | 3.96 |
| H-249 | 1¾ | 1 | 1½ | 4 | 10.50 | 6.063 |
| H-516 | 2 | ⅞ | 1½ | 4 | 10.50 | 5.88 |
| H-475 | 2 | 1 | 1¼ | 4¼ | 10.625 | 6.926 |
| H-507 | 1½ | 1⅜ | 1⅝ | 3³⁄₁₆ | 10.686 | 7.025 |
| H-481 | 2½ | ³¹⁄₃₂ | 1⁵⁄₁₆ | 3½ | 11.127 | 7.479 |
| H-319 | 2 | 1 | 1¼ | 4½ | 11.25 | 7.16 |
| H-611 | 2¼ | 1 | 1⅜ | 3⅞ | 12.00 | 7.47 |
| ✚H-546 | 2¼ | 1 | 1½ | 4 | 13.50 | 7.77 |
| H-628 | 1½ | 1½ | 1⅝ | 4³⁄₁₆ | 15.30 | 8.91 |
| H-717 | 7¼ | 5 | 7 | 16 | 4060.00 | 546.00 |

✚ **preferred core sizes**: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

Pg 18



## 2 mil series L

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| +L-1 | ¼ | ⅛ | ¼ | ½ | .004 | .013 |
| L-66 | ¼ | ⅛ | ¼ | 9/16 | .004 | .016 |
| L-163 | ¼ | 5/32 | ¼ | ½ | .005 | .019 |
| L-305 | ⅜ | ⅛ | ¼ | ½ | .006 | .021 |
| +L-2 | ¼ | 3/16 | ¼ | ⅝ | .008 | .027 |
| +L-143 | ¼ | ¼ | ¼ | ½ | .008 | .035 |
| +L-147 | ¼ | ⅛ | 5/16 | 1 | .01 | .023 |
| L-161 | ¼ | ¼ | ¼ | ⅝ | .01 | .039 |
| +L-3 | ⅜ | 3/16 | ¼ | ⅝ | .011 | .039 |
| +L-4 | ¼ | ¼ | ¼ | ⅞ | .014 | .047 |
| L-306 | ½ | 3/16 | ¼ | ⅝ | .015 | .06 |
| L-284 | ⅜ | 5/32 | 5/16 | 1 | .018 | .044 |
| +L-5 | ⅜ | ¼ | ¼ | ⅞ | .020 | .067 |
| L-281 | 5/16 | ¼ | 5/16 | ⅞ | .021 | .058 |
| L-71 | ⅜ | 3/16 | 5/16 | 1 | .022 | .053 |
| L-269 | ⅜ | 9/32 | ¼ | ⅞ | .023 | .079 |
| +L-7 | ⅜ | 7/32 | 5/16 | 1 | .026 | .064 |
| +L-6 | ½ | ¼ | ¼ | ⅞ | .027 | .091 |
| L-76 | ⅜ | 3/16 | ⅜ | 1 | .027 | .05 |
| L-37 | ⅜ | 7/32 | 5/16 | 1 1/16 | .028 | .068 |
| L-114 | ⅜ | 7/32 | 5/16 | 1⅛ | .029 | .072 |
| L-132 | ⅜ | ¼ | 5/16 | 1 | .029 | .076 |
| L-151 | ⅝ | ¼ | 3/16 | 1⅛ | .033 | .116 |
| L-62 | ¼ | ¼ | ½ | 1⅛ | .036 | .063 |
| +L-124 | ½ | ¼ | 5/16 | 1 | .039 | .103 |
| L-69 | ¼ | ¼ | ½ | 1¼ | .04 | .067 |
| L-51 | ⅜ | 5/16 | 15/32 | ¾ | .041 | .10 |
| L-240 | ⅜ | ¼ | ⅜ | 1 3/16 | .042 | .087 |
| L-88 | ⅜ | ⅜ | 5/16 | 1 | .044 | .129 |
| L-247 | ¼ | ¼ | 7/16 | 1 9/16 | .044 | .071 |
| L-261 | ⅜ | 9/32 | ⅜ | 1 3/16 | .046 | .101 |
| L-123 | ½ | ¼ | ⅜ | 1 | .047 | .106 |
| L-138 | ⅜ | ¼ | ½ | 1 | .047 | .084 |
| L-40 | ¼ | ¼ | ½ | 1 9/16 | .05 | .081 |
| L-267 | ¼ | ¼ | ⅝ | 1 9/16 | .061 | .081 |
| L-121 | ⅜ | ¼ | ½ | 1 5/16 | .062 | .099 |
| L-8 | ⅜ | ⅜ | ⅜ | 1 3/16 | .063 | .147 |
| L-232 | ½ | ¼ | ½ | 1⅛ | .071 | .121 |
| L-280 | ⅝ | 5/16 | ⅜ | 1 | .073 | .105 |
| +L-9 | ½ | ⅜ | ⅜ | 1 3/16 | .084 | .197 |
| +L-13 | ⅝ | ¼ | ½ | 1⅛ | .088 | .153 |
| L-159 | ½ | ½ | ⅜ | 1 | .094 | .261 |
| L-227 | ½ | 7/16 | ⅜ | 1 3/16 | .097 | .238 |
| L-41 | ⅜ | ⅜ | ½ | 1⅜ | .098 | .169 |
| L-50 | ⅝ | ¼ | ½ | 1¼ | .098 | .162 |
| L-94 | ⅝ | 5/16 | 5/16 | 1⅝ | .099 | .228 |
| L-272 | ⅝ | 9/32 | ½ | 1⅛ | .099 | .174 |
| L-192 | ⅜ | 3/16 | 1⅛ | 1¼ | .10 | .091 |
| +L-10 | ⅝ | ⅜ | ⅜ | 1 3/16 | .105 | .243 |
| L-238 | ½ | 7/16 | ½ | 1 | .11 | .23 |

## 2 mil series L

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| +L-12 | ½ | 7/16 | ½ | 1⅛ | .124 | .244 |
| +L-11 | ¾ | ⅜ | ⅜ | 1 3/16 | .125 | .293 |
| L-216 | ⅜ | ⅜ | ⅝ | 1 9/16 | .137 | .191 |
| +L-135 | ½ | 7/16 | 9/16 | 1⅛ | .138 | .251 |
| L-167 | ½ | 7/16 | ½ | 1¼ | .138 | .258 |
| L-208 | ⅝ | 5/16 | 7/16 | 1⅝ | .138 | .24 |
| L-33 | ½ | ½ | ½ | 1⅛ | .141 | .293 |
| L-142 | ¾ | ⅜ | ½ | 1⅛ | .159 | .303 |
| +L-78 | ¾ | 5/16 | 5/16 | 2¼ | .164 | .342 |
| L-97 | ⅜ | ⅜ | ⅝ | 2 | .176 | .217 |
| L-136 | ½ | 9/16 | ½ | 1¼ | .176 | .362 |
| L-83 | ¾ | 5/16 | ⅝ | 1¼ | .183 | .268 |
| L-107 | ⅝ | 5/16 | ⅝ | 1½ | .183 | .246 |
| L-45 | ⅝ | ½ | 7/16 | 1⅜ | .188 | .393 |
| +L-14 | ½ | ½ | ½ | 1 9/16 | .195 | .346 |
| L-152 | ½ | ½ | ½ | 1⅝ | .203 | .355 |
| L-202 | ½ | 7/16 | ½ | 1⅞ | .206 | .325 |
| +L-18 | ½ | 7/16 | ⅝ | 1 9/16 | .214 | .305 |
| L-131 | 1 | 7/16 | ½ | 1 | .219 | .466 |
| L-207 | ½ | 7/16 | ½ | 2 | .22 | .339 |
| L-211 | ¾ | ⅜ | ½ | 1 9/16 | .22 | .364 |
| L-181 | ⅝ | ⅝ | ½ | 1⅛ | .221 | .495 |
| L-153 | 1 | ⅜ | ½ | 1 3/16 | .223 | .41 |
| L-169 | ½ | 7/16 | ⅝ | 1⅝ | .223 | .313 |
| L-308 | ¾ | ¼ | ⅝ | 1 29/32 | .225 | .065 |
| L-254 | ¾ | 7/16 | 5/16 | 2¼ | .23 | .507 |
| L-75 | 1 | 11/32 | 9/16 | 1¼ | .241 | .396 |
| L-268 | ½ | ½ | ⅝ | 1 9/16 | .244 | .368 |
| +L-15 | ⅝ | ½ | ½ | 1 9/16 | .245 | .436 |
| L-32 | 1 | 7/16 | ½ | 1⅛ | .246 | .494 |
| L-190 | ½ | ⅜ | ⅞ | 1½ | .248 | .274 |
| L-166 | ¾ | ½ | ⅝ | 1⅛ | .263 | .462 |
| L-219 | ½ | 7/16 | ⅝ | 1 15/16 | .265 | .345 |
| L-42 | ⅝ | ⅝ | ½ | 1⅜ | .27 | .544 |
| L-28 | 1 | 7/16 | ½ | 1¼ | .274 | .531 |
| L-203 | 1 | ½ | ½ | 1⅛ | .281 | .585 |
| +L-16 | ¾ | ½ | ½ | 1 9/16 | .294 | .519 |
| L-217 | ½ | ½ | ⅝ | 1 15/16 | .302 | .408 |
| L-86 | 1 | ½ | ½ | 1¼ | .313 | .616 |
| L-250 | 1 | ⅝ | ⅜ | 1⅜ | .322 | .825 |
| L-43 | ⅝ | ⅝ | ⅝ | 1 9/16 | .381 | .604 |
| L-210 | ¾ | ⅜ | ¾ | 1 13/16 | .382 | .434 |
| L-30 | ⅞ | 9/16 | ⅝ | 1¼ | .385 | .661 |
| +L-17 | 1 | ½ | ½ | 1 9/16 | .391 | .693 |
| L-39 | ⅝ | ½ | ⅝ | 2 | .392 | .58 |
| L-307 | ⅞ | ⅜ | ⅝ | 1 15/16 | .397 | .50 |
| L-184 | 1 | 7/16 | ⅝ | 1½ | .41 | .603 |
| L-220 | ½ | ½ | ¾ | 2 5/16 | .435 | .464 |
| L-241 | ½ | ½ | 1 | 1¾ | .438 | .428 |
| L-266 | ¾ | ¾ | ⅝ | 1¼ | .44 | .84 |

+ **preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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## 2 mil series L

| catalog number | strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| L-236 | 1 | 3/8 | 5/8 | 1 15/16 | .453 | .57 |
| L-243 | 1 | 15/32 | 5/8 | 1 8/16 | .458 | .662 |
| L-127 | 3/4 | 3/4 | 3/4 | 1 1/8 | .475 | .844 |
| L-154 | 3/4 | 3/8 | 3/4 | 2 1/4 | .475 | .481 |
| +L-19 | 1 | 1/2 | 5/8 | 1 9/16 | .489 | .724 |
| L-204 | 1 | 5/8 | 5/8 | 1 1/4 | .489 | .87 |
| L-174 | 1 | 7/8 | 1/2 | 1 1/8 | .493 | 1.278 |
| L-200 | 1/2 | 3/8 | 1 1/8 | 2 3/8 | .504 | .374 |
| L-92 | 1/2 | 1/2 | 1 3/16 | 1 3/4 | .52 | .455 |
| L-271 | 7/8 | 5/8 | 5/8 | 1 9/16 | .534 | .837 |
| L-122 | 3/4 | 3/4 | 13/16 | 1 3/16 | .543 | .88 |
| L-244 | 3/4 | 1/2 | 3/4 | 1 16/16 | .544 | .629 |
| L-21 | 3/4 | 5/8 | 5/8 | 1 15/16 | .568 | .81 |
| L-91 | 1/2 | 1/2 | 15/16 | 2 1/2 | .585 | .51 |
| L-112 | 1 | 1/2 | 11/16 | 1 3/4 | .602 | .785 |
| +L-20 | 1 | 5/8 | 5/8 | 1 8/16 | .611 | .965 |
| L-155 | 1 | 7/16 | 5/8 | 2 1/4 | .614 | .743 |
| L-245 | 1 | 1/2 | 7/8 | 1 1/2 | .657 | .764 |
| L-288 | 7/8 | 1/2 | 1/2 | 3 | .657 | .904 |
| L-196 | 1 1/8 | 1/2 | 7/16 | 2 3/4 | .677 | 1.082 |
| L-149 | 1 | 1/2 | 1/2 | 2 3/4 | .688 | .965 |
| L-296 | 1/2 | 1/2 | 1 1/4 | 2 1/4 | .703 | .514 |
| L-85 | 1 | 7/16 | 7/8 | 1 7/8 | .716 | .915 |
| +L-64 | 1 1/8 | 1/2 | 7/16 | 3 | .738 | 1.142 |
| L-239 | 3/4 | 3/8 | 1 1/8 | 2 3/8 | .751 | .551 |
| +L-22 | 1 | 5/8 | 5/8 | 1 16/16 | .757 | 1.08 |
| L-65 | 1 | 3/8 | 1 3/16 | 1 3/4 | .781 | .645 |
| L-214 | 1 1/8 | 5/8 | 5/8 | 1 16/16 | .85 | 1.22 |
| L-186 | 1 | 3/8 | 15/16 | 2 1/2 | .878 | .729 |
| L-38 | 3/4 | 5/8 | 3/4 | 2 1/2 | .88 | .956 |
| L-44 | 3/4 | 5/8 | 3/4 | 2 8/16 | .902 | .983 |
| L-228 | 1 | 5/8 | 3/4 | 1 15/16 | .908 | 1.12 |
| +L-23 | 1 1/4 | 5/8 | 5/8 | 1 15/16 | .945 | 1.352 |
| L-108 | 3/4 | 3/4 | 3/4 | 2 1/4 | .95 | 1.14 |
| L-182 | 3/4 | 3/4 | 3/4 | 2 6/16 | .976 | 1.16 |
| L-258 | 3/4 | 7/16 | 1 | 3 | .984 | .74 |
| L-191 | 1 | 1/2 | 7/8 | 2 1/4 | .986 | .944 |
| L-209 | 3/4 | 7/16 | 1 3/16 | 2 8/16 | .999 | .701 |
| L-178 | 1 1/2 | 11/16 | 5/8 | 1 9/16 | 1.007 | 1.645 |
| L-165 | 1 1/4 | 8/16 | 5/8 | 2 5/16 | 1.015 | 1.292 |
| +L-24 | 1 | 5/8 | 3/4 | 2 5/16 | 1.084 | 1.22 |
| L-145 | 1 1/4 | 5/8 | 29/32 | 1 9/16 | 1.106 | 1.307 |
| L-139 | 7/8 | 5/8 | 1 3/16 | 1 3/4 | 1.138 | 1.05 |
| L-48 | 1 1/2 | 1/4 | 1 3/4 | 1 3/4 | 1.148 | .70 |
| L-74 | 7/8 | 8/16 | 15/16 | 2 1/2 | 1.153 | 1.03 |
| L-187 | 1 3/8 | 9/16 | 1/2 | 3 | 1.161 | 1.644 |
| L-185 | 1 1/4 | 5/8 | 1/2 | 3 | 1.173 | 1.692 |
| L-173 | 3/4 | 5/8 | 1 | 2 9/16 | 1.202 | 1.03 |
| L-184 | 1 1/4 | 9/16 | 3/4 | 2 5/16 | 1.218 | 1.345 |
| L-118 | 1 | 5/8 | 13/16 | 2 1/2 | 1.27 | 1.31 |

## 2 mil series L

| catalog number | strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| L-84 | 3/4 | 3/4 | 15/16 | 2 1/2 | 1.32 | 1.26 |
| L-157 | 7/8 | 7/8 | 1 | 1 3/4 | 1.341 | 1.548 |
| L-303 | 1 3/8 | 18/32 | 3/4 | 2 5/16 | 1.42 | 1.56 |
| L-99 | 1 | 5/8 | 15/16 | 2 1/2 | 1.465 | 1.338 |
| L-201 | 1 1/2 | 1 | 5/8 | 1 9/16 | 1.465 | 2.76 |
| L-197 | 1 1/4 | 9/16 | 5/8 | 3 1/2 | 1.537 | 1.716 |
| L-31 | 2 | 3/8 | 1 3/16 | 1 3/4 | 1.559 | 1.29 |
| L-177 | 7/8 | 8/16 | 1 1/8 | 2 7/8 | 1.593 | 1.168 |
| L-259 | 3/4 | 3/4 | 1 | 3 | 1.689 | 1.42 |
| L-47 | 1 | 1 | 3/4 | 2 6/16 | 1.734 | 2.245 |
| L-120 | 1 | 3/4 | 16/16 | 2 1/2 | 1.758 | 1.68 |
| L-128 | 1 1/8 | 11/16 | 16/16 | 2 1/2 | 1.813 | 1.835 |
| L-100 | 1 | 5/8 | 1 | 3 | 1.875 | 1.51 |
| L-175 | 5/8 | 1 | 1 | 3 | 1.875 | 1.695 |
| L-133 | 1 | 13/16 | 15/16 | 2 1/2 | 1.903 | 1.862 |
| L-277 | 1 | 13/16 | 15/16 | 2 1/2 | 1.91 | 1.84 |
| L-172 | 1 | 5/8 | 1 1/4 | 2 1/2 | 1.953 | 1.423 |
| L-252 | 1 1/32 | 19/32 | 1 1/8 | 2 7/8 | 1.981 | 1.46 |
| +L-25 | 1 | 7/8 | 15/16 | 2 1/2 | 2.05 | 2.04 |
| L-49 | 1 1/8 | 25/32 | 15/16 | 2 1/2 | 2.06 | 1.985 |
| L-251 | 1 1/8 | 21/32 | 1 | 2 7/8 | 2.122 | 1.74 |
| L-95 | 1 | 5/8 | 1 | 3 1/2 | 2.188 | 1.665 |
| L-188 | 1 3/8 | 7/8 | 13/16 | 2 1/4 | 2.198 | 2.59 |
| L-60 | 1 1/2 | 1/2 | 3/4 | 4 | 2.252 | 2.02 |
| L-110 | 1 1/8 | 7/8 | 15/16 | 2 1/2 | 2.305 | 2.295 |
| L-102 | 1 | 1 | 15/16 | 2 1/2 | 2.343 | 2.43 |
| L-150 | 7/8 | 7/8 | 1 13/16 | 1 3/4 | 2.429 | 1.839 |
| L-46 | 1 1/8 | 7/8 | 15/16 | 2 11/16 | 2.478 | 2.38 |
| L-93 | 1 | 5/8 | 1 | 4 | 2.50 | 1.80 |
| L-106 | 2 1/2 | 19/32 | 3/4 | 2 6/16 | 2.576 | 2.86 |
| L-212 | 1 1/4 | 1 1/4 | 3/4 | 2 5/16 | 2.73 | 3.82 |
| +L-248 | 1 1/8 | 3/4 | 1 1/8 | 2 7/8 | 2.731 | 2.11 |
| L-170 | 1 1/8 | 5/8 | 1 1/4 | 3 3/16 | 2.802 | 1.85 |
| L-179 | 1 1/4 | 13/16 | 1 1/4 | 2 1/4 | 2.855 | 2.35 |
| L-73 | 1 | 7/8 | 16/16 | 3 1/2 | 2.87 | 2.48 |
| L-103 | 1 1/4 | 1 | 16/16 | 2 1/2 | 2.928 | 3.04 |
| L-53 | 1 3/8 | 7/8 | 16/16 | 2 11/16 | 3.029 | 2.92 |
| L-77 | 1 1/4 | 3/4 | 1 1/8 | 3 | 3.165 | 2.42 |
| L-189 | 1 5/8 | 26/32 | 16/16 | 2 11/16 | 3.196 | 2.985 |
| L-81 | 1 1/8 | 1 | 1 | 3 | 3.375 | 3.05 |
| L-61 | 1 1/2 | 29/32 | 16/16 | 2 11/16 | 3.422 | 3.33 |
| L-140 | 1 3/8 | 7/8 | 1 | 2 7/8 | 3.459 | 3.06 |
| L-249 | 1 1/8 | 3/4 | 1 3/8 | 3 | 3.483 | 2.26 |
| L-111 | 1 3/4 | 7/8 | 15/16 | 2 1/2 | 3.588 | 3.58 |
| L-35 | 1 1/4 | 1 | 1 | 3 | 3.75 | 3.39 |
| +L-98 | 1 | 5/8 | 2 | 3 | 3.75 | 1.82 |
| L-164 | 1 | 1 | 1 1/4 | 3 | 3.75 | 2.84 |
| L-115 | 1 3/4 | 3/4 | 1 | 3 | 3.939 | 3.31 |
| L-70 | 1 3/8 | 5/8 | 1 6/16 | 3 1/2 | 3.945 | 2.42 |
| L-101 | 1 3/4 | 28/32 | 15/16 | 2 11/16 | 3.994 | 3.88 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **2 mil series L** | | | | | | |
| L-27 | 2 | 7/8 | 15/16 | 2 1/2 | 4.10 | 4.08 |
| L-118 | 1 1/4 | 15/16 | 1 7/16 | 2 1/2 | 4.208 | 3.085 |
| L-279 | 1 1/2 | 7/8 | 1 1/16 | 3 1/16 | 4.268 | 3.48 |
| L-226 | 1 3/4 | 5/8 | 15/16 | 4 1/4 | 4.356 | 3.30 |
| L-113 | 1 1/4 | 1 1/4 | 1 1/4 | 2 1/4 | 4.397 | 4.16 |
| ✚L-54 | 2 | 3/4 | 3/4 | 4 | 4.50 | 4.325 |
| L-130 | 1 1/2 | 1 | 1 | 3 | 4.50 | 4.06 |
| L-146 | 1 1/4 | 1 1/4 | 3/4 | 4 | 4.688 | 5.125 |
| L-104 | 1 1/4 | 1 1/4 | 1 | 3 | 4.689 | 4.55 |
| L-206 | 1 3/8 | 3/4 | 1 5/16 | 3 1/2 | 4.736 | 3.01 |
| L-36 | 1 1/4 | 1 | 1 3/8 | 3 | 5.157 | 3.62 |
| L-160 | 1 1/4 | 1 1/8 | 1 3/16 | 3 3/16 | 5.324 | 4.16 |
| L-158 | 1 1/4 | 1 3/16 | 7/8 | 4 1/8 | 5.358 | 4.93 |
| L-213 | 1 5/8 | 1 | 1 1/8 | 3 | 5.484 | 4.50 |
| L-183 | 1 1/4 | 1 1/8 | 1 1/4 | 3 3/16 | 5.605 | 4.25 |
| L-105 | 1 1/2 | 1 1/4 | 1 | 3 | 5.625 | 5.48 |
| L-223 | 1 3/4 | 13/16 | 1 3/8 | 3 | 5.862 | 3.91 |
| L-29 | 1 3/4 | 1 1/8 | 1 | 3 | 5.907 | 5.54 |
| L-59 | 2 | 1 | 1 | 3 | 6.00 | 5.25 |
| L-148 | 1 3/4 | 3/4 | 1 5/16 | 3 1/2 | 6.031 | 3.84 |
| L-205 | 2 | 1 | 1 5/16 | 2 1/2 | 6.56 | 5.24 |
| L-144 | 2 | 1 1/8 | 1 | 3 | 6.75 | 6.33 |
| L-275 | 1 | 3/4 | 3 | 3 | 6.75 | 2.60 |
| L-52 | 1 5/8 | 7/8 | 1 15/16 | 2 11/16 | 7.403 | 3.31 |
| L-117 | 2 | 1 | 1 3/16 | 3 1/8 | 7.425 | 5.72 |
| L-87 | 1 1/8 | 1 5/8 | 1 3/8 | 3 | 7.542 | 6.19 |
| L-215 | 2 | 3/4 | 1 1/4 | 4 3/16 | 7.853 | 4.80 |
| L-168 | 1 | 1 | 2 | 4 | 8.00 | 3.67 |
| L-68 | 2 | 1 | 1 3/8 | 3 | 8.25 | 5.78 |
| L-126 | 2 | 1 1/4 | 1 1/8 | 3 | 8.439 | 7.41 |
| L-260 | 2 | 1 | 1 1/4 | 3 1/2 | 8.75 | 6.12 |
| L-89 | 2 | 1 1/4 | 1 1/4 | 3 | 9.375 | 7.58 |
| L-63 | 3/4 | 1 1/2 | 3 | 3 | 10.125 | 4.48 |
| L-72 | 2 | 1 1/4 | 1 3/8 | 3 | 10.314 | 7.73 |
| L-221 | 1 1/2 | 1 1/2 | 1 5/16 | 3 1/2 | 10.332 | 7.88 |
| L-299 | 2 | 1 | 1 1/4 | 4 1/4 | 10.60 | 6.85 |
| L-176 | 1 1/2 | 1 3/8 | 1 1/4 | 4 1/4 | 10.961 | 7.75 |
| L-199 | 1 5/8 | 1 1/4 | 1 5/16 | 4 5/8 | 12.326 | 7.85 |
| L-171 | 1 | 1 1/4 | 2 | 5 | 12.50 | 5.44 |
| L-198 | 2 | 1 1/4 | 1 1/4 | 4 3/16 | 13.088 | 9.20 |
| L-242 | 2 | 1 1/4 | 1 1/4 | 4 1/4 | 13.281 | 9.04 |
| L-193 | 2 1/2 | 1 1/4 | 1 | 4 1/2 | 14.063 | 11.40 |
| L-185 | 2 | 1 1/2 | 1 9/16 | 3 9/16 | 16.692 | 11.00 |
| L-141 | 1 1/2 | 1 1/2 | 1 1/2 | 5 | 16.875 | 9.50 |
| L-233 | 2 | 1 1/4 | 1 1/2 | 4 1/2 | 16.875 | 9.66 |
| L-55 | 1 5/8 | 1 1/2 | 1 3/4 | 4 1/16 | 17.333 | 9.50 |
| L-218 | 1 1/4 | 1 1/4 | 2 | 6 | 18.756 | 7.56 |
| L-67 | 1 5/8 | 1 1/2 | 1 3/4 | 4 11/16 | 20.004 | 10.49 |
| L-222 | 2 | 1 1/2 | 1 1/2 | 4 1/2 | 20.25 | 12.30 |
| L-129 | 2 | 1 1/4 | 1 13/16 | 4 7/8 | 22.084 | 10.30 |
| **2 mil series L** | | | | | | |
| L-180 | 1 5/8 | 1 9/16 | 1 13/16 | 4 7/8 | 22.42 | 11.27 |
| L-56 | 1 5/8 | 1 1/2 | 2 | 4 11/16 | 22.859 | 10.78 |
| L-237 | 2 1/2 | 1 7/8 | 1 3/8 | 3 7/8 | 24.978 | 18.65 |
| L-276 | 1 1/2 | 1 1/2 | 3 | 4 | 27.00 | 10.14 |
| L-125 | 2 | 1 3/8 | 2 | 5 | 27.50 | 12.30 |
| L-225 | 2 | 1 1/2 | 2 | 4 11/16 | 28.128 | 13.30 |
| L-224 | 2 | 1 1/2 | 2 | 5 | 30.00 | 13.65 |
| L-246 | 2 1/2 | 2 | 1 1/2 | 5 | 37.50 | 23.50 |
| L-263 | 2 3/4 | 2 5/8 | 1 3/8 | 3 7/8 | 38.463 | 32.90 |
| L-264 | 2 | 1 3/8 | 2 3/4 | 6 | 45.378 | 14.80 |
| L-278 | 2 | 2 1/2 | 2 | 4 11/16 | 46.88 | 25.85 |
| L-297 | 3 | 2 | 1 3/4 | 4 9/16 | 48.00 | 27.60 |
| L-285 | 2 1/2 | 1 7/8 | 2 1/4 | 9 13/16 | 104.00 | 34.10 |
| L-262 | 1 1/2 | 2 1/2 | 2 3/4 | 11 1/4 | 108.00 | 32.90 |
| L-289 | 3 1/8 | 1 15/16 | 2 1/2 | 8 1/16 | 121.00 | 39.70 |
| L-310 | 4 1/2 | 1 1/2 | 3 | 8 3/4 | 177.00 | 46.25 |
| L-313 | 3 | 3 | 3 1/2 | 14 1/2 | 457.00 | 97.10 |
| L-302 | 3 1/8 | 4 3/16 | 6 | 17 3/4 | 1385.00 | 195.00 |
| L-301 | 6 1/4 | 4 3/16 | 6 | 17 3/4 | 2790.00 | 390.00 |

✚ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **1 mil series M** | | | | | | |
| ✚M-3 | ¼ | ⅛ | ¼ | ½ | .004 | .014 |
| M-1 | ¼ | 3/16 | ¼ | ⅝ | .008 | .027 |
| M-21 | ¼ | ¼ | ¼ | ½ | .008 | .033 |
| M-10 | ¼ | ¼ | ¼ | ⅝ | .01 | .036 |
| M-6 | ⅜ | 3/16 | ¼ | ⅝ | .011 | .038 |
| M-2 | ¼ | ¼ | ¼ | ⅞ | .014 | .043 |
| M-4 | ⅜ | ¼ | ¼ | ⅞ | .021 | .068 |
| M-8 | ⅜ | 7/32 | 5/16 | 1 | .026 | .064 |
| ✚M-7 | ½ | ¼ | ¼ | ⅞ | .027 | .088 |
| M-34 | ⅜ | ¼ | ½ | 1 5/16 | .062 | .099 |
| M-5 | ⅜ | ⅜ | ⅜ | 1 3/16 | .063 | .143 |
| M-30 | ⅜ | ⅜ | 7/16 | 1⅛ | .07 | .143 |
| M-37 | ⅜ | ⅜ | ½ | 1⅛ | .08 | .147 |
| M-70 | ⅝ | 3/18 | ½ | 1⅜ | .081 | .114 |
| M-15 | ½ | ⅜ | ⅜ | 1 3/16 | .084 | .193 |
| M-11 | ⅝ | ¼ | ½ | 1⅛ | .088 | .155 |
| M-33 | ⅜ | ¼ | ⅞ | 1¼ | .103 | .12 |
| M-42 | ⅝ | ⅜ | ⅜ | 1 3/16 | .105 | .239 |
| M-24 | ½ | 7/16 | ½ | 1⅛ | .124 | .24 |
| M-16 | ¾ | ⅜ | ⅜ | 1⅛ | .125 | .285 |
| M-36 | ½ | 7/16 | 9/16 | 1⅛ | .138 | .246 |
| M-61 | ½ | ½ | ½ | 1¼ | .156 | .301 |
| M-71 | ⅝ | ⅜ | ½ | 1⅜ | .161 | .26 |
| M-55 | ½ | 7/16 | ½ | 1 9/18 | .172 | .286 |
| M-53 | ½ | ⅜ | ⅝ | 1⅝ | .192 | .257 |
| M-12 | ½ | ½ | ½ | 1 9/16 | .195 | .341 |
| M-49 | ¾ | 7/16 | ½ | 1¼ | .205 | .378 |
| M-43 | ½ | 7/16 | ⅝ | 1 9/16 | .214 | .299 |
| M-22 | ⅝ | ½ | ½ | 1 9/16 | .245 | .425 |
| M-31 | 1 | 7/18 | ½ | 1⅛ | .246 | .485 |
| M-40 | ¾ | ½ | ⅝ | 1⅛ | .263 | .452 |
| M-60 | ⅝ | ⅜ | 13/16 | 1 7/16 | .273 | .30 |
| M-13 | ¾ | ½ | ½ | 1 9/16 | .294 | .508 |
| M-19 | 1 | ½ | ½ | 1 9/18 | .391 | .681 |
| M-56 | ¾ | ½ | ⅝ | 1 15/16 | .453 | .60 |
| M-45 | ¾ | ¾ | ¾ | 1⅛ | .475 | .816 |
| M-14 | 1 | ½ | ⅝ | 1 9/16 | .489 | .711 |
| M-48 | ¾ | 11/16 | ⅝ | 1 9/16 | .505 | .81 |
| M-38 | ⅞ | ⅜ | 29/32 | 1 25/32 | .529 | .545 |
| M-44 | 1 | ⅝ | ⅝ | 1⅜ | .538 | .89 |
| M-67 | ¾ | ½ | ¾ | 1 15/16 | .544 | .682 |
| M-9 | ¾ | ⅝ | ⅝ | 1 15/16 | .568 | .795 |
| M-65 | 1 | ½ | 11/16 | 1¾ | .602 | .77 |
| M-39 | 1 | ⅝ | ⅝ | 1 9/16 | .611 | .948 |
| M-64 | ¾ | 9/16 | ¾ | 1 15/18 | .614 | .742 |
| M-62 | ¾ | ⅝ | ¾ | 1 15/16 | .682 | .832 |
| M-27 | 1 | 7/16 | ⅞ | 1⅞ | .716 | .915 |
| M-23 | 1 | ⅝ | ⅝ | 1 15/16 | .757 | 1.06 |
| M-51 | 1½ | 11/16 | ⅝ | 1 9/16 | 1.007 | 1.615 |
| M-41 | 1¼ | 9/18 | ⅝ | 2 5/18 | 1.015 | 1.27 |
| **1 mil series M** | | | | | | |
| M-52 | 1 | ⅝ | ¾ | 2 5/16 | 1.084 | 1.198 |
| M-35 | 1 | 1 | ⅝ | 1 15/16 | 1.211 | 1.985 |
| M-20 | 1 | ⅞ | 15/18 | 2½ | 2.05 | 2.00 |
| M-54 | 1 | 1⅛ | 15/16 | 2 1/16 | 2.173 | 2.55 |
| M-50 | ¾ | 1 | 1⅛ | 2⅞ | 2.427 | 1.99 |
| M-66 | 1 | ¾ | 1⅛ | 2⅞ | 2.427 | 1.85 |
| M-59 | 1¾ | 9/16 | 1⅜ | 3 | 4.059 | 2.47 |
| M-47 | 1½ | 1 | 1⅛ | 2⅞ | 4.853 | 3.99 |
| M-57 | 1 | 1 | 1½ | 3⅜ | 5.063 | 3.08 |
| M-28 | 1⅛ | 1⅝ | 1⅜ | 3 | 7.542 | 6.05 |
| M-58 | 2 | ⅞ | 1 5/16 | 3½ | 8.036 | 5.16 |
| M-25 | ¾ | 1½ | 3 | 3 | 10.125 | 4.48 |

✚ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

## 4 mil series Z

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| Z-164 | 1/4 | 1/8 | 1/4 | 1/2 | .004 | .014 |
| +Z-568 | 1/4 | 1/8 | 1/4 | 5/8 | .005 | .015 |
| Z-152 | 1/2 | 1/8 | 1/4 | 1/2 | .008 | .027 |
| +Z-2 | 3/8 | 3/16 | 1/4 | 5/8 | .011 | .038 |
| Z-127 | 3/8 | 13/64 | 1/4 | 5/8 | .012 | .043 |
| Z-110 | 3/8 | 1/4 | 1/4 | 5/8 | .015 | .056 |
| +Z-549 | 1/2 | 3/16 | 1/4 | 5/8 | .015 | .052 |
| +Z-530 | 1/2 | 7/32 | 1/4 | 5/8 | .018 | .063 |
| +Z-550 | 5/8 | 7/32 | 1/4 | 5/8 | .021 | .079 |
| Z-594 | 3/8 | 1/4 | 5/16 | 3/4 | .022 | .065 |
| +Z-569 | 3/8 | 1/4 | 5/16 | 7/8 | .025 | .071 |
| +Z-4 | 3/8 | 3/16 | 3/8 | 1 | .026 | .056 |
| Z-111 | 1/2 | 1/4 | 1/4 | 7/8 | .027 | .091 |
| Z-128 | 3/8 | 13/64 | 3/8 | 1 | .029 | .062 |
| Z-177 | 3/8 | 3/8 | 3/8 | 5/8 | .033 | .136 |
| +Z-531 | 1/2 | 1/4 | 5/16 | 7/8 | .034 | .094 |
| Z-586 | 3/4 | 7/32 | 1/4 | 1 | .041 | .125 |
| +Z-551 | 5/8 | 1/4 | 5/16 | 7/8 | .043 | .118 |
| Z-89 | 3/8 | 1/4 | 3/8 | 1 1/4 | .044 | .094 |
| Z-532 | 1/2 | 9/32 | 5/16 | 1 | .044 | .119 |
| +Z-112 | 1/2 | 1/4 | 3/8 | 1 | .047 | .106 |
| +Z-382 | 5/8 | 1/4 | 3/8 | 1 | .059 | .133 |
| +Z-360 | 5/8 | 5/16 | 5/16 | 1 | .061 | .169 |
| +Z-552 | 3/4 | 9/32 | 5/16 | 1 | .066 | .178 |
| +Z-1 | 1/2 | 1/4 | 1/2 | 1 1/8 | .070 | .122 |
| Z-77 | 1/2 | 1/4 | 1/2 | 1 1/8 | .071 | .126 |
| Z-88 | 3/8 | 3/8 | 7/16 | 1 3/16 | .074 | .151 |
| Z-129 | 1/2 | 17/64 | 1/2 | 1 1/8 | .075 | .131 |
| +Z-407 | 3/4 | 1/4 | 3/8 | 1 1/8 | .08 | .171 |
| Z-251 | 1/2 | 5/16 | 7/16 | 1 3/16 | .081 | .16 |
| +Z-553 | 7/8 | 5/16 | 5/16 | 1 | .085 | .237 |
| +Z-533 | 5/8 | 5/16 | 3/8 | 1 3/16 | .087 | .193 |
| Z-87 | 5/8 | 1/4 | 1/2 | 1 1/8 | .088 | .153 |
| Z-587 | 7/8 | 1/4 | 5/16 | 1 5/16 | .089 | .213 |
| +Z-380 | 7/8 | 1/4 | 3/8 | 1 1/8 | .092 | .20 |
| Z-173 | 1 | 1/4 | 3/8 | 1 | .094 | .213 |
| Z-100 | 5/8 | 5/16 | 7/16 | 1 3/16 | .101 | .20 |
| Z-94 | 1/2 | 5/16 | 7/16 | 1 9/16 | .106 | .189 |
| +Z-3 | 3/4 | 1/4 | 1/2 | 1 1/8 | .106 | .183 |
| Z-130 | 3/4 | 17/64 | 1/2 | 1 1/8 | .113 | .196 |
| Z-149 | 3/8 | 5/16 | 5/8 | 1 9/16 | .114 | .157 |
| +Z-554 | 7/8 | 5/16 | 3/8 | 1 3/16 | .121 | .271 |
| Z-17 | 1/2 | 7/16 | 1/2 | 1 1/8 | .124 | .245 |
| +Z-361 | 3/4 | 3/8 | 3/8 | 1 3/16 | .125 | .292 |
| Z-146 | 5/8 | 5/16 | 1/2 | 1 5/16 | .129 | .218 |
| Z-304 | 5/8 | 5/16 | 1/2 | 1 1/2 | .147 | .236 |
| Z-64 | 5/8 | 1/4 | 5/8 | 1 9/16 | .153 | .196 |
| Z-144 | 5/8 | 3/8 | 1/2 | 1 5/16 | .154 | .273 |
| Z-153 | 1 | 1/4 | 1/2 | 1 1/4 | .156 | .259 |
| Z-109 | 5/8 | 1/2 | 7/16 | 1 3/16 | .163 | .365 |

## 4 mil series Z

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| +Z-147 | 3/4 | 3/8 | 1/2 | 1 5/16 | .185 | .327 |
| Z-124 | 1 | 1/2 | 3/8 | 1 | .188 | .522 |
| +Z-555 | 1 1/8 | 3/8 | 3/8 | 1 3/16 | .188 | .439 |
| Z-101 | 3/4 | 3/8 | 7/16 | 1 5/8 | .20 | .362 |
| Z-117 | 1 1/8 | 9/32 | 9/16 | 1 1/8 | .20 | .326 |
| +Z-381 | 7/8 | 7/16 | 3/8 | 1 7/16 | .205 | .465 |
| Z-216 | 3/4 | 3/8 | 1/2 | 1 1/2 | .212 | .354 |
| +Z-5 | 3/4 | 3/8 | 5/8 | 1 1/4 | .220 | .334 |
| Z-80 | 1 1/8 | 5/16 | 9/16 | 1 1/8 | .222 | .369 |
| Z-19 | 3/4 | 5/16 | 5/8 | 1 9/16 | .228 | .306 |
| Z-30 | 1 | 9/32 | 1/2 | 1 5/8 | .229 | .351 |
| Z-131 | 3/4 | 13/32 | 5/8 | 1 1/4 | .239 | .372 |
| Z-102 | 3/4 | 3/8 | 1/2 | 1 3/4 | .247 | .389 |
| +Z-215 | 7/8 | 7/16 | 1/2 | 1 5/16 | .251 | .465 |
| Z-591 | 3/4 | 3/8 | 3/4 | 1 3/16 | .251 | .344 |
| Z-165 | 3/4 | 7/16 | 5/16 | 2 1/2 | .255 | .51 |
| Z-50 | 5/8 | 1/2 | 5/8 | 1 5/16 | .257 | .413 |
| Z-582 | 1 1/2 | 13/32 | 3/8 | 1 1/8 | .257 | .63 |
| Z-72 | 1 | 9/32 | 5/8 | 1 9/16 | .275 | .361 |
| +Z-556 | 1 1/8 | 3/8 | 1/2 | 1 5/16 | .277 | .491 |
| +Z-408 | 7/8 | 7/16 | 7/16 | 1 11/16 | .282 | .525 |
| Z-145 | 7/8 | 7/16 | 1/2 | 1 9/16 | .298 | .512 |
| +Z-409 | 7/8 | 13/32 | 7/16 | 1 15/16 | .30 | .522 |
| Z-58 | 5/8 | 5/8 | 5/8 | 1 1/4 | .305 | .543 |
| Z-371 | 7/8 | 3/8 | 5/8 | 1 9/16 | .32 | .443 |
| +Z-376 | 1 | 7/16 | 7/16 | 1 11/16 | .322 | .599 |
| +Z-379 | 1 | 13/32 | 7/16 | 1 15/16 | .343 | .597 |
| Z-67 | 5/8 | 1/2 | 1 1/16 | 1 1/16 | .353 | .443 |
| +Z-557 | 1 1/4 | 7/16 | 1/2 | 1 5/16 | .358 | .664 |
| Z-103 | 7/8 | 7/16 | 9/16 | 1 11/16 | .363 | .548 |
| +Z-372 | 7/8 | 7/16 | 5/8 | 1 9/16 | .373 | .535 |
| +Z-223 | 1 | 1/2 | 1/2 | 1 1/2 | .375 | .678 |
| Z-148 | 1 1/4 | 5/16 | 5/8 | 1 9/16 | .381 | .509 |
| Z-31 | 1 1/4 | 23/64 | 5/8 | 1 9/16 | .395 | .543 |
| Z-104 | 7/8 | 7/16 | 5/8 | 1 15/16 | .463 | .606 |
| Z-132 | 1 | 25/64 | 5/8 | 1 15/16 | .473 | .605 |
| Z-353 | 1 | 7/16 | 5/8 | 1 3/4 | .478 | .655 |
| Z-116 | 1/2 | 1/2 | 7/8 | 2 1/4 | .493 | .472 |
| Z-125 | 1 1/8 | 3/8 | 5/8 | 1 15/16 | .511 | .648 |
| Z-57 | 7/8 | 9/16 | 5/8 | 1 11/16 | .52 | .768 |
| Z-581 | 1 1/8 | 9/16 | 11/16 | 1 1/4 | .544 | .869 |
| +Z-558 | 1 1/2 | 1/2 | 1/2 | 1 1/2 | .563 | 1.01 |
| Z-139 | 1 1/4 | 3/8 | 5/8 | 1 15/16 | .568 | .72 |
| +Z-369 | 1 1/8 | 7/16 | 11/16 | 1 3/4 | .592 | .75 |
| +Z-411 | 7/8 | 7/16 | 5/8 | 2 1/2 | .598 | .704 |
| +Z-224 | 1 1/8 | 9/16 | 9/16 | 1 11/16 | .599 | .97 |
| Z-105 | 1 | 1/2 | 5/8 | 1 9/16 | .606 | .817 |
| Z-126 | 1 | 5/8 | 5/8 | 1 9/16 | .611 | .966 |
| Z-123 | 1/2 | 1/2 | 1 | 2 9/16 | .641 | .526 |
| Z-114 | 1 | 1/2 | 3/4 | 1 13/16 | .68 | .861 |

+ **preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series Z** | | | | | | |
| Z-163 | 1 1/4 | 3/8 | 3/4 | 1 15/16 | .682 | .755 |
| Z-119 | 1 | 5/8 | 5/8 | 1 3/4 | .684 | 1.023 |
| Z-589 | 1 1/4 | 15/32 | 5/8 | 1 15/16 | .709 | .94 |
| Z-150 | 7/8 | 7/16 | 7/8 | 2 1/4 | .752 | .705 |
| ✤Z-410 | 1 1/8 | 7/16 | 5/8 | 2 1/2 | .77 | .905 |
| Z-15 | 1 | 3/8 | 1 3/16 | 1 3/4 | .781 | .65 |
| Z-141 | 1 1/8 | 9/16 | 11/16 | 1 13/16 | .788 | 1.048 |
| Z-154 | 1 1/2 | 3/8 | 3/4 | 1 7/8 | .791 | .882 |
| Z-151 | 1 3/8 | 3/8 | 5/8 | 2 1/2 | .808 | .923 |
| Z-160 | 1 1/4 | 3/8 | 3/4 | 2 5/16 | .814 | .824 |
| ✤Z-370 | 1 1/8 | 1/2 | 3/4 | 1 15/16 | .817 | .955 |
| Z-106 | 1 | 1/2 | 5/8 | 2 5/8 | .822 | .974 |
| Z-137 | 1 | 13/32 | 1 3/16 | 1 3/4 | .844 | .615 |
| Z-68 | 1 1/8 | 5/8 | 5/8 | 1 15/16 | .850 | 1.219 |
| Z-595 | 1 | 7/16 | 7/8 | 2 1/4 | .862 | .803 |
| ✤Z-559 | 1 5/8 | 9/16 | 9/16 | 1 11/16 | .866 | 1.39 |
| Z-155 | 1 1/2 | 3/8 | 5/8 | 2 1/2 | .88 | 1.008 |
| Z-121 | 1 1/8 | 9/16 | 3/4 | 1 15/16 | .918 | 1.10 |
| ✤Z-413 | 1 1/8 | 17/32 | 5/8 | 2 1/2 | .933 | 1.14 |
| ✤Z-213 | 1 1/4 | 5/8 | 5/8 | 1 15/16 | .945 | 1.35 |
| Z-140 | 1 1/8 | 9/16 | 13/16 | 1 15/16 | .994 | 1.123 |
| ✤Z-412 | 1 1/4 | 17/32 | 5/8 | 2 1/2 | 1.038 | 1.27 |
| ✤Z-540 | 1 1/8 | 9/16 | 13/16 | 2 1/8 | 1.09 | 1.16 |
| Z-107 | 1 1/6 | 9/16 | 3/4 | 2 5/16 | 1.096 | 1.205 |
| Z-60 | 7/8 | 5/8 | 1 3/16 | 1 11/16 | 1.097 | 1.03 |
| Z-90 | 1 1/4 | 5/8 | 5/8 | 2 5/16 | 1.128 | 1.281 |
| Z-86 | 7/8 | 7/16 | 1 | 3 | 1.146 | .87 |
| Z-10 | 1 1/8 | 5/8 | 1 | 1 3/4 | 1.23 | 1.28 |
| ✤Z-415 | 1 1/4 | 5/8 | 5/8 | 2 5/8 | 1.281 | 1.60 |
| ✤Z-534 | 1 3/8 | 11/16 | 11/16 | 2 1/16 | 1.342 | 1.74 |
| ✤Z-414 | 1 3/8 | 5/8 | 5/8 | 2 5/8 | 1.41 | 1.76 |
| Z-27 | 1 3/8 | 19/32 | 3/4 | 2 5/18 | 1.417 | .997 |
| ✤Z-560 | 1 7/8 | 5/8 | 5/8 | 1 15/16 | 1.42 | 2.02 |
| Z-354 | 1 1/4 | 9/16 | 7/8 | 2 5/16 | 1.422 | 1.38 |
| ✤Z-541 | 1 1/4 | 5/8 | 7/8 | 2 5/18 | 1.579 | 1.57 |
| Z-23 | 7/8 | 9/16 | 1 1/8 | 2 7/8 | 1.593 | 1.166 |
| Z-108 | 1 1/4 | 5/8 | 3/4 | 2 3/4 | 1.612 | 1.70 |
| Z-590 | 1 1/2 | 19/32 | 3/4 | 2 1/2 | 1.67 | 1.80 |
| Z-142 | 1 1/4 | 5/8 | 15/16 | 2 1/2 | 1.83 | 1.67 |
| Z-84 | 1 | 29/32 | 15/16 | 2 1/4 | 1.91 | 1.50 |
| ✤Z-417 | 1 3/8 | 11/16 | 11/16 | 3 | 1.953 | 2.184 |
| ✤Z-561 | 2 | 11/16 | 11/16 | 2 1/16 | 1.953 | 2.53 |
| Z-7 | 1 1/2 | 5/8 | 1 | 2 1/8 | 1.993 | 1.859 |
| Z-134 | 1 1/2 | 41/64 | 1 | 2 1/8 | 2.044 | 1.928 |
| Z-62 | 1 1/4 | 9/18 | 1 1/8 | 2 7/8 | 2.274 | 1.686 |
| ✤Z-416 | 1 5/8 | 11/16 | 11/16 | 3 | 2.307 | 2.585 |
| ✤Z-214 | 1 1/2 | 3/4 | 3/4 | 2 15/16 | 2.479 | 2.30 |
| Z-24 | 1 3/8 | 9/16 | 1 1/8 | 2 7/8 | 2.501 | 1.833 |
| ✤Z-562 | 2 1/4 | 3/4 | 3/4 | 2 5/16 | 2.927 | 3.46 |
| ✤Z-419 | 1 1/2 | 3/4 | 3/4 | 3 1/2 | 2.954 | 2.96 |
| **4 mil series Z** | | | | | | |
| Z-16 | 1 1/2 | 11/16 | 1 | 3 | 3.096 | 2.54 |
| ✤Z-542 | 1 5/8 | 3/4 | 1 | 2 9/16 | 3.123 | 2.80 |
| Z-135 | 1 1/2 | 45/64 | 1 | 3 | 3.165 | 2.61 |
| ✤Z-418 | 1 7/8 | 3/4 | 3/4 | 3 1/2 | 3.693 | 3.71 |
| Z-122 | 1 1/4 | 3/4 | 15/16 | 4 1/4 | 3.736 | 2.91 |
| ✤Z-563 | 2 1/2 | 13/16 | 13/16 | 2 1/2 | 4.12 | 4.51 |
| ✤Z-543 | 1 3/4 | 13/16 | 1 1/8 | 2 7/8 | 4.597 | 3.64 |
| Z-592 | 1 1/4 | 3/4 | 2 | 3 | 5.64 | 2.82 |
| Z-13 | 1 3/4 | 13/16 | 1 3/8 | 3 | 5.862 | 3.90 |
| ✤Z-564 | 2 1/2 | 15/16 | 15/16 | 2 11/16 | 5.90 | 5.80 |
| Z-136 | 1 3/4 | 53/64 | 1 3/8 | 3 | 5.976 | 3.99 |
| ✤Z-544 | 1 3/4 | 7/8 | 1 5/16 | 3 1/2 | 7.032 | 4.61 |
| ✤Z-545 | 2 | 1 | 1 3/8 | 3 5/8 | 9.969 | 6.41 |
| ✤Z-546 | 2 1/4 | 1 | 1 1/2 | 4 | 13.50 | 7.77 |
| ✤Z-547 | 2 1/2 | 1 1/6 | 1 5/8 | 4 3/16 | 19.143 | 10.42 |

✤ **preferred core sizes:** These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

## 12 mil series TA

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| TA-21 | 1 | ½ | ½ | 1½ | .375 | 1.15 |
| TA-2 | ⅜ | ¾ | 1¼ | 2½ | .877 | 1.174 |
| TA-10 | 1¼ | ⅝ | 11/16 | 2 1/16 | 1.107 | 2.65 |
| TA-9 | 1¼ | ⅝ | ⅞ | 1 13/16 | 1.237 | 2.42 |
| TA-11 | 1⅛ | ¾ | ⅞ | 2¼ | 1.662 | 3.011 |
| TA-7 | 1⅛ | ½ | 1¼ | 2⅝ | 1.848 | 2.21 |
| TA-18 | 1¼ | ¾ | 1¼ | 2½ | 2.932 | 3.899 |
| TA-42 | 2½ | 1 | ⅝ | 1 15/16 | 3.02 | 8.56 |
| TA-19 | 1½ | ¾ | 1¼ | 2½ | 3.515 | 4.679 |
| TA-37 | 2¼ | 1 | ⅝ | 2⅝ | 3.68 | 8.84 |
| TA-20 | 1¾ | ¾ | 1¼ | 2½ | 4.102 | 5.43 |
| TA-5 | 1½ | 1 | 1¼ | 2½ | 5.157 | 6.74 |
| TA-12 | 2 | 1 | 1 | 3 | 6.00 | 9.22 |
| TA-4 | 1⅜ | 1¼ | 1⅜ | 3 | 7.092 | 9.15 |
| ✚TA-1 | 1¾ | 1 | 1⅜ | 3 | 7.218 | 8.75 |
| TA-3 | 1¾ | 1 | 1⅜ | 3⅞ | 9.323 | 9.94 |
| TA-17 | 1¾ | 1 | 1¾ | 3⅞ | 11.869 | 10.651 |
| TA-13 | 1⅝ | 1 | 1½ | 5 1/16 | 12.341 | 10.98 |
| TA-41 | 2¾ | 1 1/16 | 1⅞ | 4 3/16 | 16.50 | 19.20 |
| TA-16 | 1⅞ | 1⅝ | 2½ | 2⅜ | 18.092 | 19.805 |
| ✚TA-6 | 2½ | 1½ | 1⅜ | 3⅞ | 19.979 | 23.75 |
| TA-23 | 1⅝ | 1⅞ | 1½ | 5 1/16 | 23.138 | 24.10 |
| TA-53 | 2½ | 1¼ | 1¾ | 4½ | 24.70 | 21.60 |
| TA-22 | 2½ | 1⅞ | 1⅜ | 3⅞ | 24.978 | 32.00 |
| TA-651 | 2½ | 1½ | 1⅞ | 4⅛ | 28.90 | 26.50 |
| TA-34 | 3 | 1 17/32 | 1¼ | 5 1/18 | 29.10 | 33.00 |
| TA-27 | 2⅝ | 1⅛ | 2 | 5 25/32 | 34.10 | 23.60 |
| TA-32 | 2⅝ | 1¼ | 2 | 5½ | 36.10 | 26.00 |
| TA-668 | 2¼ | 2 | 2 | 5¼ | 47.30 | 39.10 |
| TA-652 | 3⅛ | 1¾ | 2⅛ | 4⅝ | 53.70 | 43.90 |
| TA-667 | 3½ | 1¾ | 2¼ | 4 17/32 | 62.50 | 49.50 |
| TA-39 | 3 | 1¾ | 2¼ | 6⅜ | 75.30 | 50.20 |
| TA-653 | 3⅜ | 2 | 2⅜ | 5⅛ | 82.00 | 60.80 |
| TA-659 | 3¾ | 2⅛ | 2⅝ | 5⅛ | 107.00 | 74.90 |
| TA-654 | 3¾ | 2¼ | 2⅝ | 5⅛ | 114.00 | 80.90 |
| TA-661 | 2⅜ | 2⅜ | 3 5/16 | 6½ | 122.00 | 65.10 |
| TA-666 | 3¾ | 2½ | 2⅝ | 5⅛ | 126.00 | 93.00 |
| TA-47 | 2 | 2¾ | 2⅛ | 11 | 129.00 | 81.70 |
| TA-40 | 2⅞ | 2¼ | 2¾ | 7½ | 133.40 | 73.20 |
| TA-655 | 4 | 2¾ | 3⅛ | 6⅛ | 211.00 | 127.00 |
| TA-45 | 4 | 3⅜ | 2¾ | 5¾ | 214.00 | 158.00 |
| TA-665 | 2½ | 2 | 4 | 12 | 240.00 | 80.60 |
| TA-658 | 3¾ | 2½ | 3 13/16 | 6⅞ | 246.00 | 118.00 |
| TA-35 | 3½ | 3½ | 2½ | 8½ | 260.00 | 167.60 |
| TA-663 | 4 | 2¾ | 3¾ | 8 | 330.00 | 150.40 |
| TA-44 | 4 | 3 | 3¾ | 8 | 360.00 | 168.00 |
| TA-664 | 3¾ | 2 | 4 | 12 | 360.00 | 120.70 |
| TA-650 | 2¼ | 2⅞ | 5 | 13½ | 437.00 | 126.00 |
| TA-656 | 4 | 3¾ | 3¾ | 8 | 450.00 | 225.20 |
| TA-662 | 3¾ | 4 7/16 | 4¼ | 8¾ | 618.00 | 283.00 |
| TA-53 | 5 | 3⅞ | 3⅝ | 9 | 633.00 | 299.00 |
| TA-28 | 4 | 5 | 4¼ | 8½ | 723.00 | 350.00 |
| TA-43 | 4 | 5 | 5¼ | 8½ | 893.00 | 375.00 |
| TA-38 | 6 | 7¼ | 3⅝ | 9 | 1419.00 | 336.00 |

✚ **preferred core sizes**: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

pg 26

| catalog number | dimensions in inches: strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series TH** | | | | | | |
| TH-112 | 1/4 | 1/4 | 5/16 | 1 | .02 | .082 |
| TH-105 | 3/8 | 1/4 | 5/16 | 1 | .029 | .123 |
| +TH-97 | 3/8 | 1/4 | 7/16 | 1 | .041 | .14 |
| TH-656 | 3/8 | 1/4 | 1/2 | 1 1/2 | .069 | .17 |
| TH-43 | 3/8 | 3/8 | 1/2 | 1 1/8 | .079 | .246 |
| +TH-69 | 1/2 | 3/8 | 7/16 | 1 | .082 | .309 |
| +TH-96 | 3/4 | 5/16 | 7/16 | 1 1/8 | .115 | .39 |
| TH-49 | 5/8 | 3/8 | 1/2 | 1 1/8 | .131 | .42 |
| TH-110 | 5/8 | 3/8 | 1/2 | 1 1/4 | .146 | .432 |
| TH-52 | 3/4 | 3/8 | 1/2 | 1 1/8 | .158 | .56 |
| +TH-25 | 1/2 | 3/8 | 5/8 | 1 5/8 | .191 | .435 |
| TH-26 | 1/2 | 1/2 | 5/8 | 1 5/16 | .204 | .544 |
| +TH-55 | 5/8 | 3/8 | 3/4 | 1 3/16 | .209 | .495 |
| TH-83 | 3/4 | 1/2 | 1/2 | 1 1/8 | .211 | .736 |
| +TH-74 | 3/4 | 3/8 | 1/2 | 1 9/16 | .22 | .675 |
| +TH-41 | 3/4 | 1/2 | 5/8 | 1 3/8 | .321 | .856 |
| TH-116 | 1 | 1/2 | 1/2 | 1 3/8 | .343 | .645 |
| +TH-56 | 3/4 | 1/2 | 5/8 | 1 9/16 | .365 | .911 |
| TH-62 | 1 | 1/2 | 1/2 | 1 1/2 | .375 | 1.176 |
| TH-89 | 1/2 | 1/2 | 3/4 | 2 | .376 | .725 |
| TH-84 | 5/8 | 1/2 | 3/4 | 1 5/8 | .381 | .814 |
| +TH-78 | 1 | 1/2 | 1/2 | 1 9/18 | .39 | 1.15 |
| TH-87 | 3/4 | 1/2 | 11/16 | 1 5/8 | .419 | .953 |
| TH-48 | 7/8 | 1/2 | 5/8 | 1 5/8 | .445 | 1,05 |
| TH-67 | 5/8 | 1/2 | 3/4 | 2 | .47 | .905 |
| +TH-77 | 1 | 1/2 | 5/8 | 1 9/16 | .488 | 1.214 |
| TH-123 | 1 | 1/2 | 5/8 | 1 9/16 | .488 | 1.21 |
| +TH-66 | 7/8 | 1/2 | 11/16 | 1 5/8 | .489 | 1,11 |
| TH-40 | 3/4 | 3/4 | 7/8 | 1 1/8 | .554 | 1.553 |
| +TH-65 | 1 | 1/2 | 11/16 | 1 5/8 | .559 | 1.27 |
| +TH-31 | 3/4 | 3/4 | 13/18 | 1 1/4 | .571 | 1.52 |
| TH-99 | 1 3/8 | 1/2 | 5/8 | 1 9/16 | .671 | 1.62 |
| TH-88 | 1 | 1/2 | 11/16 | 2 1/16 | .695 | 1.418 |
| TH-19 | 5/8 | 3/8 | 1 1/2 | 2 | .702 | .825 |
| TH-98 | 1 1/2 | 1/2 | 5/8 | 1 9/16 | .732 | 1.762 |
| +TH-53 | 3/4 | 2 1/4 | 7/16 | 1 | .738 | .28 |
| TH-7 | 7/8 | 5/8 | 3/4 | 1 13/16 | .742 | 1.50 |
| +TH-90 | 1 | 1/2 | 3/4 | 2 | .75 | 1.45 |
| TH-80 | 1 | 3/4 | 11/16 | 1 5/8 | .838 | 2.14 |
| TH-109 | 1 | 1/2 | 3/4 | 2 1/4 | .843 | 1.474 |
| TH-18 | 3/4 | 3/8 | 1 1/2 | 2 | .844 | .987 |
| TH-662 | 1 | 3/4 | 3/4 | 1 1/2 | .845 | 1.92 |
| TH-47 | 1 1/8 | 5/8 | 5/8 | 1 15/16 | .85 | 2.02 |
| TH-12 | 3/4 | 3/8 | 1 3/8 | 2 5/16 | .892 | 1.212 |
| TH-28 | 3/4 | 1 | 13/16 | 1 1/2 | .913 | 2.201 |
| +TH-30 | 1 1/4 | 5/8 | 5/8 | 1 15/16 | .945 | 2.25 |
| TH-29 | 1 1/8 | 5/8 | 13/16 | 1 11/16 | .963 | 2.10 |
| TH-20 | 7/8 | 3/8 | 1 1/2 | 2 | .984 | 1.16 |
| TH-27 | 3/4 | 3/4 | 7/8 | 2 | .986 | .495 |
| TH-136 | 1 1/4 | 9/16 | 11/16 | 2 1/16 | .996 | 1.98 |
| **4 mil series TH** | | | | | | |
| TH-51 | 1 | 1 | 13/16 | 1 1/4 | 1.015 | 3.105 |
| TH-5 | 1 1/4 | 13/16 | 13/16 | 1 1/4 | 1.03 | 2.626 |
| +TH-58 | 1 1/4 | 5/8 | 11/16 | 2 1/16 | 1.107 | 2.34 |
| TH-107 | 1 1/8 | 5/8 | 7/8 | 1 13/16 | 1.114 | 2.07 |
| TH-131 | 1 1/4 | 5/8 | 3/4 | 2 | 1.17 | 2.28 |
| TH-32 | 3/4 | 3/4 | 15/16 | 2 1/4 | 1.188 | 2.049 |
| TH-9 | 7/8 | 7/16 | 1 1/4 | 2 1/2 | 1.195 | 1.422 |
| +TH-61 | 1 1/4 | 5/8 | 7/8 | 1 13/16 | 1.237 | 2.37 |
| TH-17 | 1 | 7/16 | 1 1/2 | 2 | 1.312 | 1,612 |
| TH-95 | 1 | 3/4 | 1 | 1 3/4 | 1.312 | 2.509 |
| TH-42 | 1 1/4 | 3/4 | 13/16 | 2 | 1.524 | 3.13 |
| TH-102 | 1 1/4 | 9/16 | 1 1/8 | 1 15/16 | 1.534 | 2.25 |
| TH-11 | 1 | 1/2 | 1 1/4 | 2 1/2 | 1.562 | 1.902 |
| TH-94 | 1 | 3/4 | 1 1/4 | 1 3/4 | 1.641 | 2.696 |
| TH-71 | 1 1/8 | 3/4 | 7/8 | 2 1/4 | 1.662 | 2.95 |
| +TH-33 | 1 | 3/4 | 1 | 2 1/4 | 1.687 | 2.71 |
| TH-664 | 2 1/8 | 9/16 | 3/4 | 1 7/8 | 1.69 | 3.32 |
| +TH-6 | 3/4 | 3/4 | 1 1/4 | 2 1/2 | 1.76 | 2.29 |
| TH-10 | 1 1/8 | 1/2 | 1 1/4 | 2 1/2 | 1.76 | 2.14 |
| TH-85 | 1 | 3/4 | 1 | 2 3/8 | 1.781 | 2.87 |
| TH-132 | 1 1/4 | 13/16 | 15/16 | 1 7/8 | 1.79 | 3.33 |
| TH-46 | 1 1/4 | 7/8 | 7/8 | 1 7/8 | 1.794 | 3.70 |
| TH-16 | 7/8 | 1/2 | 1 3/8 | 3 | 1.806 | 1.838 |
| TH-60 | 3/4 | 3/4 | 1 1/4 | 2 5/8 | 1.848 | 2.374 |
| TH-655 | 2 | 8/16 | 7/8 | 1 7/8 | 1.85 | 3.08 |
| +TH-70 | 1 1/4 | 7/8 | 15/16 | 1 7/8 | 1.921 | 3.79 |
| TH-660 | 2 1/8 | 5/8 | 3/4 | 1 15/16 | 1.93 | 3.63 |
| TH-59 | 1 1/2 | 3/4 | 3/4 | 2 5/18 | 1.951 | 4.00 |
| TH-659 | 1 | 1 | 13/16 | 2 1/2 | 2.03 | 3.80 |
| TH-118 | 1 1/4 | 3/4 | 1 | 2 1/4 | 2.11 | 3.27 |
| TH-117 | 1 1/8 | 3/4 | 7/8 | 3 | 2.217 | 3.22 |
| +TH-91 | 7/8 | 7/8 | 1 | 3 | 2.298 | 3.33 |
| TH-101 | 1 3/8 | 3/4 | 1 | 2 1/4 | 2.319 | 3.60 |
| TH-652 | 1 1/4 | 19/32 | 1 1/4 | 2 1/2 | 2.32 | 2.90 |
| TH-15 | 1 1/8 | 1/2 | 1 3/8 | 3 | 2.322 | 2.624 |
| +TH-35 | 1 | 3/4 | 1 1/4 | 2 1/2 | 2.345 | 3.05 |
| TH-81 | 1 1/4 | 3/4 | 1 1/8 | 2 1/4 | 2.373 | 3.51 |
| TH-667 | 1 | 7/8 | 1 | 2 3/4 | 2.40 | 3.32 |
| TH-665 | 1 | 7/8 | 1 1/8 | 2 1/2 | 2.46 | 3.16 |
| TH-661 | 1 3/8 | 1 | 13/16 | 2 3/8 | 2.64 | 4.64 |
| TH-666 | 1 | 7/8 | 1 1/8 | 2 3/4 | 2.70 | 3.32 |
| TH-13 | 1 1/4 | 9/16 | 1 3/8 | 3 | 2.901 | 3.066 |
| TH-133 | 1 3/8 | 5/8 | 1 1/8 | 3 | 2.90 | 3.46 |
| +TH-4 | 1 1/4 | 3/4 | 1 1/4 | 2 1/2 | 2.932 | 3.81 |
| +TH-92 | 1 | 1 | 1 | 3 | 3,00 | 4.51 |
| TH-135 | 1 1/4 | 1 | 1 5/32 | 2 1/8 | 3.08 | 4.84 |
| +TH-34 | 1 | 1 | 1 1/4 | 2 1/2 | 3.125 | 4.39 |
| TH-39 | 1 1/2 | 1 | 15/16 | 2 1/4 | 3.163 | 5.94 |
| TH-106 | 1 1/2 | 5/8 | 1 1/2 | 2 1/4 | 3.165 | 3.60 |
| TH-14 | 1 1/4 | 5/8 | 1 3/8 | 3 | 3.219 | 3.284 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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| catalog number | dimensions in inches | | | | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| | strip width D | build up E | win-dow width F | win-dow length G | | |
| **4 mil series TH** | | | | | | |
| **TH-121** | 1⅜ | ¾ | 1¼ | 2½ | 3.23 | 4.09 |
| **+TH-2** | 1½ | 1 | 1 | 2¼ | 3.375 | 5.90 |
| **TH-64** | 1½ | ¾ | 1¼ | 2½ | 3.515 | 4.57 |
| **TH-72** | 1⅛ | 1 | 1¼ | 2½ | 3.515 | 4.94 |
| **TH-119** | 1⅝ | 1 | 1 | 2¼ | 3.66 | 6.30 |
| **+TH-79** | 1¾ | ¾ | 1¼ | 2¼ | 3.692 | 5.34 |
| **TH-45** | 1⅛ | 1⅛ | 1½ | 2 | 3.798 | 5.625 |
| **+TH-36** | 1¼ | 1 | 1¼ | 2½ | 3.907 | 4.39 |
| **TH-73** | 1¼ | ¾ | 1⅛ | 4¹⁄₁₆ | 4.285 | 4.81 |
| **TH-658** | 1¾ | ⅞ | 1 | 3 | 4.59 | 3.00 |
| **TH-654** | 1¾ | 1 | 1½ | 1¾ | 4.60 | 6.65 |
| **TH-657** | 1¾ | 1⅛ | 1 | 2⅜ | 4.68 | 8.20 |
| **TH-103** | 1½ | 1 | 1¼ | 2½ | 4.687 | 6.37 |
| **TH-111** | 2 | ¾ | 1¼ | 2½ | 4.687 | 5.905 |
| **TH-113** | 1⅝ | 1 | 1 | 3 | 4.875 | 7.094 |
| **TH-104** | 1¾ | 1 | 1¼ | 2½ | 5.47 | 7.44 |
| **TH-57** | 1¼ | 1¹⁄₁₆ | 1⅜ | 3 | 5.478 | 6.66 |
| **TH-82** | 1 | 1 | 1⅝ | 3⅜ | 5.484 | 5.42 |
| **+TH-68** | 2 | 1 | 1 | 3 | 6.00 | 9.02 |
| **TH-100** | 1½ | 1 | 1⅜ | 3 | 6.189 | 7.11 |
| **TH-1** | 1¼ | 1 | 2¼ | 2¼ | 6.329 | 6.87 |
| **TH-8** | 1¼ | ⅞ | 1 | 6⅛ | 6.70 | 7.295 |
| **TH-668** | 1¾ | 1 | 1⅛ | 3½ | 6.89 | 9.00 |
| **TH-115** | 1¾ | 1 | 1⅜ | 3 | 7.218 | 8.30 |
| **TH-23** | 1¼ | ⅝ | 2 | 4¹¹⁄₁₆ | 7.322 | 5.045 |
| **TH-108** | 1⅞ | 1 | 1⁹⁄₁₆ | 2½ | 7.322 | 8.29 |
| **TH-21** | 1¼ | ¹¹⁄₁₆ | 2 | 4¹¹⁄₁₆ | 8.053 | 4.90 |
| **TH-663** | 1½ | 1 | 1½ | 4 | 9.00 | 8.41 |
| **TH-76** | 1⅜ | 1⅜ | 1⅝ | 3 | 9.219 | 12.69 |
| **TH-134** | 1⅜ | 1 | 1⅜ | 5⁵⁄₁₆ | 10.04 | 8.88 |
| **TH-650** | 1⅝ | ¾ | 1½ | 5½ | 10.07 | 7.91 |
| **TH-22** | 1¼ | ⅞ | 2 | 4¹¹⁄₁₆ | 10.257 | 7.05 |
| **TH-24** | 1½ | ¾ | 2 | 4¹¹⁄₁₆ | 10.548 | 7.24 |
| **TH-86** | 2 | 1 | 1⅜ | 3⅞ | 10.656 | 10.78 |
| **TH-3** | 2 | 1⅜ | 1⅜ | 3 | 11.343 | 14.685 |
| **TH-54** | 2 | 1 | 2 | 3 | 12.00 | 11.57 |
| **+TH-75** | 1⅝ | 1 | 1½ | 5¹⁄₁₆ | 12.341 | 10.73 |
| **TH-38** | 2 | 1½ | 1⅜ | 3 | 12.375 | 16.71 |
| **TH-63** | 2 | 1 | 1⅝ | 4³⁄₁₆ | 13.611 | 12.00 |
| **TH-50** | 1½ | 1 | 2 | 4¹¹⁄₁₆ | 14.064 | 10.12 |
| **TH-137** | 3 | 1 | 1⅝ | 3⅜ | 16.47 | 15.80 |
| **TH-37** | 2¼ | 1⅝ | 1⅜ | 3½ | 17.594 | 22.20 |
| **TH-147** | 1¾ | 1⅜ | 1¾ | 4⅜ | 18.38 | 21.50 |
| **TH-122** | 3 | 1 | 1⅝ | 4⅛ | 20.13 | 44.40 |
| **TH-114** | 3 | 1⅛ | 1⅝ | 4³⁄₁₆ | 22.966 | 23.15 |

+ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

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| catalog number | dimensions in inches strip width D | build up E | window width F | window length G | relative power handl'g capac'y | weight: pounds |
|---|---|---|---|---|---|---|
| **4 mil series TZ** | | | | | | |
| TZ-14 | 3/8 | 1/4 | 7/16 | 1 | .041 | .14 |
| TZ-25 | 1/2 | 1/4 | 7/16 | 1 1/8 | .061 | .198 |
| TZ-17 | 1/2 | 3/8 | 7/16 | 1 | .082 | .309 |
| TZ-26 | 3/4 | 1/4 | 7/16 | 1 | .082 | .27 |
| TZ-36 | 3/4 | 1/4 | 1/2 | 1 9/16 | .146 | .361 |
| TZ-35 | 3/4 | 5/16 | 1/2 | 1 9/16 | .184 | .468 |
| TZ-11 | 3/4 | 3/8 | 1/2 | 1 9/16 | .22 | .675 |
| TZ-21 | 1 | 1/2 | 1/2 | 1 9/16 | .39 | 1.11 |
| TZ-28 | 3/4 | 1/2 | 11/16 | 1 5/8 | .419 | .923 |
| ✚TZ-20 | 3/4 | 3/8 | 3/4 | 2 | .422 | .768 |
| TZ-23 | 1 1/8 | 1/2 | 1/2 | 1 9/16 | .44 | 1.25 |
| TZ-13 | 5/8 | 1/2 | 3/4 | 2 | .47 | .905 |
| TZ-9 | 1 | 1/2 | 5/8 | 1 9/16 | .488 | 1.214 |
| TZ-18 | 1 | 1/2 | 11/16 | 1 5/8 | .559 | 1.27 |
| TZ-34 | 1 | 3/8 | 3/4 | 2 | .562 | .994 |
| TZ-22 | 1/4 | 3/4 | 1 | 3 | .564 | 3.81 |
| TZ-27 | 1 | 1/2 | 11/16 | 2 1/16 | .709 | 1.418 |
| ✚TZ-12 | 1 | 1/2 | 3/4 | 2 | .75 | 1.45 |
| TZ-42 | 1 | 3/4 | 11/16 | 1 5/8 | .838 | 2.076 |
| TZ-15 | 1 | 1/2 | 7/8 | 2 1/4 | .985 | 1.535 |
| TZ-5 | 1 1/4 | 5/8 | 7/8 | 1 13/16 | 1.237 | 2.37 |
| TZ-30 | 1 | 3/4 | 1 | 1 3/4 | 1.312 | 2.38 |
| TZ-29 | 1 | 1/2 | 1 | 3 | 1.50 | 1.877 |
| TZ-40 | 1 1/4 | 3/4 | 1 | 1 3/4 | 1.641 | 2.972 |
| TZ-16 | 1 | 3/4 | 1 | 2 1/4 | 1.687 | 2.774 |
| TZ-6 | 1 1/4 | 3/4 | 7/8 | 2 1/4 | 1.847 | 2.95 |
| TZ-33 | 1 | 5/8 | 1 | 3 | 1.875 | 2.442 |
| TZ-8 | 1 | 3/4 | 1 | 3 | 2.25 | 3.14 |
| TZ-44 | 1 1/2 | 29/32 | 3/4 | 2 1/4 | 2.292 | 4.683 |
| TZ-32 | 1 1/4 | 5/8 | 1 | 3 | 2.343 | 3.053 |
| TZ-19 | 1 | 3/4 | 1 1/4 | 2 1/2 | 2.345 | 3.05 |
| TZ-36 | 1 3/8 | 13/16 | 1 | 2 1/4 | 2.515 | 3.85 |
| TZ-10 | 1 | 3/4 | 1 | 3 1/2 | 2.625 | 3.32 |
| TZ-49 | 3/4 | 5/8 | 2 | 3 | 2.808 | 2.29 |
| TZ-39 | 1 1/2 | 29/32 | 1 | 2 1/4 | 3.057 | 5.019 |
| TZ-3 | 1 1/8 | 1 | 1 7/16 | 2 | 3.234 | 4.69 |
| TZ-7 | 1 1/2 | 1 | 1 | 2 1/4 | 3.375 | 5.90 |
| TZ-2 | 1 1/4 | 1 | 1 7/16 | 2 | 3.592 | 5.13 |
| TZ-37 | 1 5/8 | 1 1/6 | 3/4 | 3 | 4.113 | 7.807 |
| TZ-45 | 1 5/8 | 1 | 7/6 | 3 | 4.266 | 6.893 |
| TZ-31 | 1 1/4 | 3/4 | 1 1/8 | 4 1/16 | 4.285 | 4.664 |
| TZ-4 | 1 1/2 | 1 | 1 1/4 | 2 1/2 | 4.687 | 6.36 |
| TZ-43 | 1 5/8 | 1 | 1 | 3 | 4.875 | 7.094 |
| TZ-41 | 1 3/8 | 1 | 1 1/4 | 3 | 5.157 | 6.344 |
| TZ-1 | 1 1/2 | 1 | 1 1/2 | 4 | 9.00 | 9.115 |
| TZ-47 | 1 5/8 | 1 | 1 1/2 | 5 1/16 | 12.341 | 10.40 |
| TZ-46 | 1 5/8 | 1 1/4 | 1 1/2 | 5 1/16 | 15.423 | 13.613 |

✚ preferred core sizes: These cores should be used wherever possible in designing new transformers. They are subject to maximum discount regardless of quantity ordered. See selling policy 46-700.

## ring type cores

| core size | dimensions: inches strip width: D | build up: E | inside dia.: F | outside dia.: A | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| 202 | 1/4 | 1/8 | 1/2 | 3/4 | .061 | .006 |
| 206 | 1/4 | 1/8 | 9/16 | 13/16 | .067 | .008 |
| 212 | 1/4 | 1/8 | 5/8 | 7/8 | .073 | .009 |
| 207 | 1/4 | 3/16 | 9/16 | 15/16 | .111 | .012 |
| 203 | 1/4 | 1/4 | 1/2 | 1 | .148 | .013 |
| 208 | 1/4 | 7/32 | 9/16 | 1 | .135 | .013 |
| 210 | 1/4 | 1/4 | 9/16 | 1 1/16 | .161 | .016 |
| 213 | 1/4 | 1/4 | 5/8 | 1 1/8 | .173 | .02 |
| 217 | 1/4 | 3/16 | 3/4 | 1 1/8 | .139 | .02 |
| 211 | 3/8 | 1/4 | 9/16 | 1 1/16 | .24 | .023 |
| 234 | 1/4 | 1/8 | 1 | 1 1/4 | .11 | .024 |
| 219 | 1/4 | 1/4 | 3/4 | 1 1/4 | .198 | .027 |
| 204 | 5/8 | 1/4 | 1/2 | 1 | .368 | .031 |
| 218 | 3/8 | 3/16 | 3/4 | 1 1/8 | .209 | .031 |
| 209 | 5/8 | 7/32 | 9/16 | 1 | .336 | .034 |
| 223 | 1/4 | 5/16 | 3/4 | 1 3/8 | .26 | .035 |
| 237 | 1/4 | 3/16 | 1 | 1 3/8 | .175 | .037 |
| 220 | 3/8 | 1/4 | 3/4 | 1 1/4 | .295 | .042 |
| 205 | 1/2 | 7/16 | 1/2 | 1 3/8 | .645 | .043 |
| 240 | 1/4 | 1/4 | 1 | 1 1/2 | .247 | .049 |
| 221 | 1/2 | 1/4 | 3/4 | 1 1/4 | .393 | .055 |
| 238 | 3/8 | 3/16 | 1 | 1 3/8 | .265 | .056 |
| 512 | 1/4 | 1/4 | 1 1/8 | 1 5/8 | .272 | .063 |
| 259 | 1/4 | 1/4 | 1 3/16 | 1 11/16 | .285 | .07 |
| 225 | 3/8 | 7/16 | 3/4 | 1 5/8 | .612 | .072 |
| 239 | 1/2 | 3/16 | 1 | 1 3/8 | .351 | .074 |
| 241 | 3/8 | 1/4 | 1 | 1 1/2 | .369 | .074 |
| 233 | 1/2 | 7/32 | 15/16 | 1 3/8 | .40 | .076 |
| 214 | 1/2 | 1/2 | 5/8 | 1 5/8 | .884 | .077 |
| 236 | 5/8 | 5/32 | 1 | 1 5/16 | .356 | .077 |
| 261 | 1/4 | 1/4 | 1 1/4 | 1 3/4 | .297 | .077 |
| 224 | 5/8 | 5/16 | 3/4 | 1 3/8 | .651 | .086 |
| 230 | 3/8 | 9/16 | 3/4 | 1 7/8 | .87 | .093 |
| 256 | 3/8 | 1/4 | 1 1/8 | 1 5/8 | .406 | .093 |
| 281 | 1/4 | 1/4 | 1 3/8 | 1 7/8 | .322 | .093 |
| 215 | 5/8 | 1/2 | 5/8 | 1 5/8 | 1.11 | .096 |
| 263 | 1/4 | 5/16 | 1 1/4 | 1 7/8 | .383 | .096 |
| 222 | 7/8 | 1/4 | 3/4 | 1 1/4 | .688 | .097 |
| 226 | 1/2 | 7/16 | 3/4 | 1 5/8 | .817 | .097 |
| 309 | 1/4 | 3/16 | 1 5/8 | 2 | .268 | .097 |
| 242 | 1/2 | 1/4 | 1 | 1 1/2 | .491 | .098 |
| 235 | 1 1/8 | 1/8 | 1 | 1 1/4 | .498 | .111 |
| 244 | 3/8 | 3/8 | 1 | 1 3/4 | .609 | .111 |
| 292 | 1/4 | 1/4 | 1 1/2 | 2 | .346 | .112 |
| 216 | 3/4 | 1/2 | 5/8 | 1 5/8 | 1.32 | .115 |
| 227 | 5/8 | 7/16 | 3/4 | 1 5/8 | 1.02 | .121 |
| 243 | 5/8 | 1/4 | 1 | 1 1/2 | .613 | .123 |
| 395 | 1/4 | 1/8 | 2 3/8 | 2 5/8 | .243 | .137 |
| 289 | 3/8 | 1/4 | 1 7/16 | 1 15/16 | .498 | .152 |
| 262 | 1/2 | 1/4 | 1 1/4 | 1 3/4 | .589 | .153 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

## ring type cores

| core size | dimensions: inches | | | | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| | strip width: D | build up: E | inside dia.: F | outside dia.: A | | |
| 258 | ½ | 5/16 | 1⅛ | 1¾ | .704 | .155 |
| 385 | ¼ | 5/32 | 2¼ | 2 9/16 | .295 | .155 |
| 295 | ¼ | ⅜ | 1½ | 2¼ | .554 | .167 |
| 265 | ⅜ | ⅜ | 1¼ | 2 | .72 | .173 |
| 245 | ⅝ | ⅜ | 1 | 1¾ | 1.01 | .184 |
| 249 | ½ | 15/32 | 1 | 1 15/16 | 1.09 | .185 |
| 231 | ⅝ | 19/32 | 13/16 | 2 | 1.64 | .192 |
| 228 | 1 | 7/16 | ¾ | 1⅝ | 1.63 | .194 |
| 310 | ½ | 3/16 | 1⅝ | 2 | .535 | .195 |
| 250 | ½ | ½ | 1 | 2 | 1.18 | .196 |
| 506 | 1 | 11/32 | ⅞ | 1 9/16 | 1.31 | .207 |
| 284 | ⅜ | ⅜ | 1⅜ | 2⅛ | .775 | .21 |
| 246 | ¾ | ⅜ | 1 | 1¾ | 1.21 | .221 |
| 291 | 1 | ⅛ | 1½ | 1¾ | .638 | .221 |
| 293 | ½ | ¼ | 1½ | 2 | .687 | .221 |
| 322 | ¼ | ⅜ | 1¾ | 2½ | .628 | .226 |
| 330 | ⅜ | 7/32 | 1⅞ | 2 5/16 | .539 | .226 |
| 266 | ½ | ⅜ | 1¼ | 2 | .96 | .231 |
| 232 | ¾ | 19/32 | 13/16 | 2 | 1.97 | .231 |
| 283 | ½ | 5/16 | 1⅜ | 2 | .827 | .232 |
| 379 | ⅜ | 3/16 | 2 1/16 | 2 7/16 | .502 | .237 |
| 264 | ⅝ | 5/16 | 1¼ | 1⅞ | .957 | .24 |
| 306 | ½ | ¼ | 1 9/16 | 2 1/16 | .712 | .24 |
| 523 | 1¼ | ¼ | 1 | 1½ | 1.23 | .246 |
| 296 | ⅜ | ⅜ | 1½ | 2¼ | .831 | .249 |
| 247 | ⅞ | ⅜ | 1 | 1¾ | 1.42 | .258 |
| 248 | ¾ | 7/16 | 1 | 1⅞ | 1.49 | .258 |
| 308 | 1 | ⅛ | 1⅝ | 1⅞ | .687 | .259 |
| 311 | ½ | ¼ | 1⅝ | 2⅛ | .736 | .259 |
| 267 | ⅝ | ⅜ | 1¼ | 2 | 1.19 | .287 |
| 255 | 1¼ | 15/64 | 1⅛ | 1 19/32 | 1.25 | .291 |
| 279 | ⅝ | 11/32 | 1 5/16 | 2 | 1.12 | .291 |
| 312 | ⅜ | ⅜ | 1⅝ | 2⅜ | .886 | .292 |
| 268 | ½ | ½ | 1¼ | 2¼ | 1.37 | .307 |
| 257 | 1¼ | ¼ | 1⅛ | 1⅝ | 1.35 | .311 |
| 229 | 1⅝ | 7/16 | ¾ | 1⅝ | 2.65 | .315 |
| 331 | ½ | 15/64 | 1⅞ | 2 11/32 | .775 | .323 |
| 260 | 1¼ | 7/32 | 1¼ | 1 11/16 | 1.27 | .336 |
| 324 | ⅜ | ⅜ | 1¾ | 2½ | .941 | .339 |
| 294 | ⅝ | 5/16 | 1½ | 2⅛ | 1.11 | .345 |
| 328 | ½ | ¼ | 1⅞ | 2⅜ | .835 | .346 |
| 332 | ½ | ¼ | 1⅞ | 2⅜ | .835 | .346 |
| 426 | ⅜ | 3/16 | 2 9/16 | 2 15/16 | .613 | .366 |
| 353 | ¼ | 15/32 | 2 | 2 15/16 | .908 | .368 |
| 341 | ½ | 17/64 | 1 29/32 | 2 7/16 | .908 | .379 |
| 297 | ½ | 7/16 | 1½ | 2⅜ | 1.33 | .387 |
| 251 | 1 | ½ | 1 | 2 | 2.36 | .393 |
| 344 | ½ | ¼ | 2 | 2½ | .884 | .393 |
| 282 | 1 | 9/32 | 1⅜ | 1 15/16 | 1.46 | .417 |
| 252 | ¾ | ¾ | 1 | 2½ | 3.10 | .442 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

**ring type cores**

| core size | dimensions: inches strip width: D | build up: E | inside dia.: F | outside dia.: A | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| 299 | 1/2 | 1/2 | 1 1/2 | 2 1/2 | 1.57 | .442 |
| 350 | 3/8 | 3/8 | 2 | 2 3/4 | 1.05 | .443 |
| 307 | 5/8 | 3/8 | 1 9/16 | 2 5/16 | 1.42 | .448 |
| 334 | 3/8 | 7/16 | 1 7/8 | 2 3/4 | 1.19 | .453 |
| 329 | 7/8 | 3/16 | 1 7/8 | 2 1/4 | 1.07 | .456 |
| 269 | 3/4 | 1/2 | 1 1/4 | 2 1/4 | 2.06 | .46 |
| 403 | 1 | 3/32 | 2 1/2 | 2 11/16 | .766 | .462 |
| 404 | 3/8 | 1/4 | 2 1/2 | 3 | .812 | .462 |
| 298 | 5/8 | 7/16 | 1 1/2 | 2 3/8 | 1.67 | .485 |
| 319 | 1/4 | 15/16 | 1 5/8 | 3 1/2 | 1.89 | .488 |
| 300 | 5/8 | 1/2 | 1 1/2 | 2 1/2 | 1.97 | .553 |
| 354 | 3/8 | 15/32 | 2 | 2 15/16 | 1.36 | .553 |
| 338 | 1/4 | 13/16 | 1 7/8 | 3 1/2 | 1.71 | .561 |
| 343 | 1 | 3/16 | 2 | 2 3/8 | 1.29 | .591 |
| 253 | 7/8 | 7/8 | 1 | 2 3/4 | 4.51 | .602 |
| 405 | 1/2 | 1/4 | 2 1/2 | 3 | 1.08 | .613 |
| 270 | 1 | 1/2 | 1 1/4 | 2 1/4 | 2.75 | .614 |
| 285 | 1 | 7/16 | 1 3/8 | 2 1/4 | 2.49 | .65 |
| 301 | 3/4 | 1/2 | 1 1/2 | 2 1/2 | 2.36 | .663 |
| 313 | 7/8 | 3/8 | 1 5/8 | 2 3/8 | 2.06 | .68 |
| 345 | 7/8 | 1/4 | 2 | 2 1/2 | 1.55 | .688 |
| 335 | 1/2 | 1/2 | 1 7/8 | 2 7/8 | 1.86 | .69 |
| 317 | 1/2 | 11/16 | 1 5/8 | 3 | 2.50 | .714 |
| 320 | 3/8 | 15/16 | 1 5/8 | 3 1/2 | 2.83 | .73 |
| 355 | 1/2 | 15/32 | 2 | 2 15/16 | 1.82 | .738 |
| 287 | 1 | 1/2 | 1 3/8 | 2 3/8 | 2.95 | .743 |
| 323 | 1 1/4 | 1/4 | 1 3/4 | 2 1/4 | 1.97 | .753 |
| 406 | 5/8 | 1/4 | 2 1/2 | 3 | 1.35 | .766 |
| 336 | 1/2 | 9/16 | 1 7/8 | 3 | 2.15 | .776 |
| 254 | 1 | 1 | 1 | 1 | 6.28 | .785 |
| 346 | 1 | 1/4 | 2 | 2 1/2 | 1.77 | .785 |
| 356 | 1/2 | 1/2 | 2 | 3 | 1.96 | .785 |
| 370 | 1/4 | 1 | 2 | 4 | 2.36 | .785 |
| 351 | 5/8 | 13/32 | 2 | 2 13/16 | 1.92 | .798 |
| 384 | 1 5/8 | 1/8 | 2 1/4 | 2 1/2 | 1.51 | .807 |
| 302 | 1 | 1/2 | 1 1/2 | 2 1/2 | 3.14 | .884 |
| 453 | 1/4 | 1/2 | 3 | 4 | 1.38 | .884 |
| 325 | 7/8 | 7/16 | 1 3/4 | 2 5/8 | 2.63 | .921 |
| 408 | 5/8 | 5/16 | 2 1/2 | 3 1/8 | 1.72 | .957 |
| 321 | 1/2 | 15/16 | 1 5/8 | 3 1/2 | 3.78 | .973 |
| 286 | 1 1/2 | 7/16 | 1 3/8 | 2 1/4 | 3.74 | .975 |
| 520 | 2 | 5/32 | 2 | 2 5/16 | 2.11 | .98 |
| 348 | 1 | 5/16 | 2 | 2 5/8 | 2.27 | .98 |
| 357 | 5/8 | 1/2 | 2 | 3 | 2.46 | .983 |
| 333 | 1 1/2 | 1/4 | 1 7/8 | 2 3/8 | 2.50 | 1.04 |
| 276 | 1 1/4 | 23/32 | 1 1/4 | 2 11/16 | 5.56 | 1.10 |
| 303 | 1 | 5/8 | 1 1/2 | 2 3/4 | 4.17 | 1.10 |
| 349 | 1 1/8 | 5/16 | 2 | 2 5/8 | 2.55 | 1.10 |
| 342 | 3/8 | 1 1/32 | 1 15/16 | 4 | 3.61 | 1.14 |
| 278 | 1 1/4 | 3/4 | 1 1/4 | 2 3/4 | 5.89 | 1.15 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

## ring type cores

| core size | dimensions: inches strip width: D | build up: E | inside dia.: F | outside dia.: A | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| 358 | 3/4 | 1/2 | 2 | 3 | 2.95 | 1.18 |
| 371 | 3/8 | 1 | 2 | 4 | 3.53 | 1.18 |
| 430 | 7/8 | 1/4 | 2 5/8 | 3 1/8 | 1.98 | 1.19 |
| 327 | 1 | 1/2 | 1 3/4 | 2 3/4 | 3.53 | 1.20 |
| 362 | 5/8 | 5/8 | 2 | 3 1/4 | 3.22 | 1.23 |
| 407 | 1 | 1/4 | 2 1/2 | 3 | 2.16 | 1.23 |
| 410 | 1/2 | 1/2 | 2 1/2 | 3 1/2 | 2.36 | 1.23 |
| 339 | 9/16 | 13/16 | 1 7/8 | 3 1/2 | 3.85 | 1.26 |
| 363 | 5/8 | 41/64 | 2 | 3 9/32 | 3.33 | 1.26 |
| 433 | 5/8 | 3/8 | 2 5/8 | 3 3/8 | 2.21 | 1.27 |
| 352 | 1 | 13/32 | 2 | 2 13/16 | 3.07 | 1.28 |
| 428 | 5/8 | 13/32 | 2 9/16 | 3 3/8 | 2.37 | 1.31 |
| 304 | 1 | 3/4 | 1 1/2 | 3 | 5.30 | 1.33 |
| 452 | 1/2 | 3/8 | 3 | 3 3/4 | 1.99 | 1.33 |
| 364 | 5/8 | 11/16 | 2 | 3 3/8 | 3.63 | 1.35 |
| 434 | 1/2 | 1/2 | 2 5/8 | 3 5/8 | 2.46 | 1.35 |
| 505 | 1 | 1/2 | 1 7/8 | 2 7/8 | 3.73 | 1.38 |
| 288 | 1 1/4 | 3/4 | 1 3/8 | 2 7/8 | 6.26 | 1.39 |
| 450 | 5/8 | 11/32 | 2 7/8 | 3 9/16 | 2.17 | 1.40 |
| 382 | 3/4 | 1/2 | 2 3/16 | 3 3/16 | 3.17 | 1.41 |
| 314 | 1 7/8 | 3/8 | 1 5/8 | 2 3/8 | 4.42 | 1.46 |
| 439 | 2 | 1/8 | 2 3/4 | 3 | 2.26 | 1.49 |
| 315 | 2 | 3/8 | 1 5/8 | 2 3/8 | 4.71 | 1.56 |
| 347 | 2 | 1/4 | 2 | 2 1/2 | 3.54 | 1.57 |
| 359 | 1 | 1/2 | 2 | 3 | 3.93 | 1.57 |
| 372 | 1/2 | 1 | 2 | 4 | 4.71 | 1.57 |
| 425 | 2 1/2 | 1/8 | 2 9/16 | 2 13/16 | 2.64 | 1.61 |
| 402 | 3/4 | 1/2 | 2 13/32 | 3 13/32 | 3.42 | 1.71 |
| 409 | 1 | 23/64 | 2 1/2 | 3 7/32 | 3.23 | 1.76 |
| 290 | 2 1/4 | 1/2 | 1 7/16 | 2 7/16 | 6.85 | 1.83 |
| 411 | 3/4 | 1/2 | 2 1/2 | 3 1/2 | 3.53 | 1.84 |
| 275 | 2 1/4 | 11/16 | 1 1/4 | 2 5/8 | 9.42 | 1.90 |
| 445 | 2 | 5/32 | 2 13/16 | 3 1/8 | 2.91 | 1.94 |
| 360 | 1 1/4 | 1/2 | 2 | 3 | 4.91 | 1.96 |
| 386 | 2 | 1/4 | 2 1/4 | 2 3/4 | 3.93 | 1.99 |
| 429 | 5/8 | 5/8 | 2 19/32 | 3 27/32 | 3.95 | 2.07 |
| 280 | 2 1/2 | 5/8 | 1 5/16 | 2 9/16 | 9.51 | 2.11 |
| 412 | 7/8 | 1/2 | 2 1/2 | 3 1/2 | 4.13 | 2.15 |
| 378 | 1/2 | 1 3/8 | 2 | 4 3/4 | 7.30 | 2.16 |
| 396 | 1 | 1/2 | 2 3/8 | 3 3/8 | 4.52 | 2.22 |
| 447 | 5/8 | 19/32 | 2 13/16 | 4 | 3.97 | 2.30 |
| 468 | 1 1/4 | 1/4 | 3 1/16 | 3 9/16 | 3.26 | 2.31 |
| 316 | 2 | 9/16 | 1 5/8 | 2 3/4 | 7.72 | 2.33 |
| 365 | 1 | 3/4 | 2 | 3 1/2 | 6.48 | 2.36 |
| 373 | 3/4 | 1 | 2 | 4 | 7.07 | 2.36 |
| 431 | 1 3/4 | 1/4 | 2 5/8 | 3 1/8 | 3.96 | 2.37 |
| 326 | 2 | 1/2 | 1 3/4 | 2 3/4 | 7.07 | 2.41 |
| 474 | 1 | 1/4 | 3 1/2 | 4 | 2.95 | 2.41 |
| 381 | 3/4 | 59/64 | 2 1/8 | 3 31/32 | 6.62 | 2.45 |
| 413 | 1 | 1/2 | 2 1/2 | 3 1/2 | 4.71 | 2.45 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

## ring type cores

| core size | dimensions: inches strip width: D | build up: E | inside dia.: F | outside dia.: A | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| 519 | 1⅜ | ¾ | 1¾ | 3¼ | 8.10 | 2.48 |
| 387 | 1 | ⅝ | 2¼ | 3½ | 5.65 | 2.49 |
| 380 | 2 | ⅜ | 2⅛ | 2⅞ | 5.89 | 2.66 |
| 432 | 2 | ¼ | 2⅝ | 3⅛ | 4.52 | 2.71 |
| 374 | ⅞ | 1 | 2 | 4 | 8.25 | 2.75 |
| 486 | ⅞ | ¼ | 4 | 4½ | 2.92 | 2.75 |
| 440 | 1 | ½ | 2¾ | 3¾ | 5.10 | 2.97 |
| 435 | 1⅛ | ½ | 2⅝ | 3⅝ | 5.53 | 3.05 |
| 500 | ½ | 5/16 | 5 | 5⅝ | 2.60 | 3.06 |
| 415 | 1 | ⅝ | 2½ | 3¾ | 6.14 | 3.07 |
| 361 | 2 | ½ | 2 | 3 | 7.85 | 3.14 |
| 375 | 1 | 1 | 2 | 4 | 9.43 | 3.14 |
| 398 | 1⅛ | 21/32 | 2⅜ | 3 11/16 | 7.03 | 3.27 |
| 318 | 1¾ | 59/64 | 1⅝ | 3 15/32 | 12.90 | 3.35 |
| 366 | 1½ | ¾ | 2 | 3½ | 9.72 | 3.53 |
| 454 | 1 | ½ | 3 | 4 | 5.50 | 3.53 |
| 418 | 1 | ¾ | 2½ | 4 | 7.66 | 3.68 |
| 424 | ½ | 1½ | 2½ | 5½ | 9.43 | 3.68 |
| 469 | 2 | ¼ | 3 1/16 | 3 9/16 | 5.20 | 3.68 |
| 448 | 1 | 19/32 | 2 13/16 | 4 | 6.36 | 3.69 |
| 388 | 1½ | ⅝ | 2¼ | 3½ | 8.47 | 3.73 |
| 478 | ⅝ | ⅝ | 3½ | 4¾ | 5.07 | 3.76 |
| 416 | 1¼ | ⅝ | 2½ | 3¾ | 7.67 | 3.83 |
| 305 | 2 | 1⅛ | 1½ | 3¾ | 18.60 | 3.98 |
| 518 | 1½ | 1½ | 1½ | 4½ | 21.20 | 3.98 |
| 421 | 1 | ⅞ | 2½ | 4¼ | 9.28 | 4.30 |
| 376 | 1⅜ | 1 | 2 | 4 | 13.00 | 4.32 |
| 391 | 1⅛ | 1 | 2¼ | 4¼ | 11.50 | 4.47 |
| 417 | 1½ | ⅝ | 2½ | 3¾ | 9.21 | 4.61 |
| 367 | 2 | ¾ | 2 | 3½ | 12.90 | 4.71 |
| 377 | 1½ | 1 | 2 | 4 | 14.10 | 4.71 |
| 401 | 1 | 1 1/16 | 2⅜ | 4½ | 11.50 | 4.71 |
| 337 | 2½ | 11/16 | 1⅞ | 3¼ | 13.80 | 4.75 |
| 476 | 1 | ½ | 3½ | 4½ | 6.28 | 4.81 |
| 427 | 2½ | ⅜ | 2 9/16 | 3 5/16 | 8.66 | 4.84 |
| 515 | 1⅜ | ½ | 3 | 4 | 7.56 | 4.86 |
| 389 | 2 | ⅝ | 2¼ | 3½ | 11.30 | 4.97 |
| 436 | 1¼ | ¾ | 2⅝ | 4⅛ | 9.95 | 5.08 |
| 446 | 1⅞ | 7/16 | 2 13/16 | 3 11/16 | 8.38 | 5.10 |
| 390 | 1½ | ⅞ | 2¼ | 4 | 12.90 | 5.22 |
| 368 | 2 | 27/32 | 2 | 3 11/16 | 15.10 | 5.30 |
| 457 | 1 | ¾ | 3 | 4½ | 8.84 | 5.30 |
| 465 | ½ | 1½ | 3 | 6 | 10.60 | 5.301 |
| 477 | 1⅛ | ½ | 3½ | 4½ | 7.08 | 5.41 |
| 479 | ¾ | ¾ | 3½ | 5 | 7.52 | 5.42 |
| 414 | 2¼ | ½ | 2½ | 3½ | 10.60 | 5.52 |
| 419 | 1½ | ¾ | 2½ | 4 | 11.50 | 5.52 |
| 400 | 1¼ | 1 | 2⅜ | 4⅜ | 13.20 | 5.54 |
| 397 | 2¼ | 9/16 | 2⅜ | 3½ | 11.70 | 5.61 |
| 487 | 1 | ½ | 4 | 5 | 7.07 | 6.28 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

## ring type cores

| core size | dimensions: inches strip width: D | build up: E | inside dia.: F | outside dia.: A | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| 451 | 1/2 | 1 15/16 | 2 7/8 | 6 3/4 | 14.60 | 6.29 |
| 383 | 2 | 27/32 | 2 3/16 | 3 7/8 | 16.10 | 6.35 |
| 340 | 2 1/2 | 15/16 | 1 7/8 | 3 3/4 | 20.70 | 6.48 |
| 466 | 1/2 | 1 27/32 | 3 | 6 11/16 | 14.00 | 6.52 |
| 399 | 2 1/4 | 21/32 | 2 3/8 | 3 11/16 | 14.10 | 6.54 |
| 392 | 1 1/2 | 1 1/8 | 2 1/4 | 4 1/2 | 17.90 | 6.71 |
| 393 | 1 | 1 11/16 | 2 1/4 | 5 5/8 | 20.90 | 6.71 |
| 394 | 2 | 27/32 | 2 9/32 | 3 31/32 | 16.90 | 6.90 |
| 422 | 1 1/8 | 1 1/4 | 2 1/2 | 5 | 16.60 | 6.90 |
| 455 | 2 | 1/2 | 3 | 4 | 11.00 | 7.07 |
| 459 | 1 | 1 | 3 | 5 | 12.60 | 7.07 |
| 480 | 1 | 3/4 | 3 1/2 | 5 | 10.00 | 7.22 |
| 420 | 2 | 3/4 | 2 1/2 | 4 | 15.30 | 7.36 |
| 475 | 2 1/2 | 5/16 | 3 1/2 | 4 1/8 | 9.34 | 7.50 |
| 369 | 2 13/16 | 15/16 | 2 | 3 7/8 | 24.40 | 8.29 |
| 456 | 1 3/4 | 11/16 | 3 | 4 3/8 | 13.90 | 8.51 |
| 470 | 1 3/8 | 13/16 | 3 1/8 | 4 3/4 | 13.80 | 8.57 |
| 458 | 1 1/2 | 7/8 | 3 | 4 3/4 | 16.00 | 9.28 |
| 510 | 1 | 1 | 3 1/2 | 5 1/2 | 14.10 | 9.62 |
| 461 | 1 1/4 | 1 1/8 | 3 | 5 1/4 | 18.20 | 9.94 |
| 491 | 1 | 13/16 | 4 | 5 5/8 | 12.30 | 10.20 |
| 444 | 1 | 1 3/4 | 2 3/4 | 6 1/4 | 24.70 | 10.40 |
| 509 | 2 | 3/4 | 3 | 4 1/2 | 17.70 | 10.60 |
| 460 | 1 1/2 | 1 | 3 | 5 | 18.90 | 10.60 |
| 437 | 2 | 1 | 2 5/8 | 4 5/8 | 22.80 | 10.80 |
| 463 | 1 1/4 | 1 1/4 | 3 | 5 1/2 | 20.90 | 11.10 |
| 449 | 1 3/8 | 1 5/16 | 2 13/16 | 5 7/16 | 23.40 | 11.20 |
| 488 | 1 1/4 | 3/4 | 4 | 5 1/2 | 14.00 | 11.80 |
| 441 | 2 | 1 | 2 3/4 | 4 3/4 | 23.60 | 11.90 |
| 423 | 2 | 1 1/4 | 2 1/2 | 5 | 29.50 | 12.30 |
| 471 | 2 | 3/4 | 3 1/4 | 4 3/4 | 18.80 | 12.50 |
| 462 | 1 1/2 | 1 3/16 | 3 | 5 3/8 | 23.40 | 12.60 |
| 492 | 1 | 1 | 4 | 6 | 15.70 | 12.60 |
| 489 | 1 1/2 | 3/4 | 4 | 5 1/2 | 16.80 | 14.10 |
| 438 | 2 13/16 | 1 1/16 | 2 5/8 | 4 3/4 | 34.60 | 16.20 |
| 484 | 2 3/4 | 1/2 | 3 7/8 | 4 7/8 | 18.90 | 16.20 |
| 442 | 2 | 1 3/8 | 2 3/4 | 5 1/2 | 35.60 | 16.30 |
| 490 | 1 3/4 | 3/4 | 4 | 5 1/2 | 19.60 | 16.50 |
| 508 | 2 | 7/8 | 3 1/2 | 5 1/4 | 24.10 | 16.80 |
| 464 | 2 | 1 1/4 | 3 | 5 1/2 | 33.40 | 17.70 |
| 443 | 2 1/4 | 1 3/8 | 2 3/4 | 5 1/2 | 40.10 | 18.30 |
| 472 | 2 1/4 | 1 | 3 1/4 | 5 1/4 | 30.00 | 18.70 |
| 493 | 1 1/2 | 1 | 4 | 6 | 23.60 | 18.90 |
| 495 | 1 1/4 | 1 1/4 | 4 | 6 1/2 | 25.80 | 19.60 |
| 473 | 2 1/2 | 1 | 3 1/4 | 5 1/4 | 33.40 | 20.70 |
| 498 | 1 3/8 | 1 1/16 | 4 5/16 | 6 7/16 | 24.60 | 21.30 |
| 483 | 1 7/8 | 1 1/32 | 3 3/4 | 5 13/16 | 29.00 | 21.40 |
| 467 | 1 3/4 | 1 7/8 | 3 | 6 3/4 | 50.20 | 23.20 |
| 481 | 2 1/2 | 1 | 3 1/2 | 5 1/2 | 35.30 | 24.10 |
| 502 | 1 | 1 | 5 5/8 | 7 5/8 | 20.80 | 24.80 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.

**ring type cores**

| core size | dimensions: inches | | | | gross volume: cubic inches+ | relative power handling capacity |
|---|---|---|---|---|---|---|
| | strip width: D | build up: E | inside dia.: F | outside dia.: A | | |
| 494 | 2 | 1 | 4 | 6 | 31.40 | 25.10 |
| 507 | 2 | 1⅛ | 4¼ | 6½ | 37.90 | 31.90 |
| 496 | 2 | 1½ | 4 | 7 | 51.80 | 37.70 |
| 497 | 2½ | 1½ | 4 | 7 | 64.80 | 47.10 |
| 499 | 1⅜ | 2⅛ | 4⅞ | 9⅛ | 64.30 | 54.50 |
| 485 | 4 | 1⅜ | 3⅞ | 6⅝ | 90.70 | 64.90 |
| 501 | 2 | 1¾ | 5 | 8½ | 74.20 | 68.70 |
| 503 | 2¼ | 1⁵⁄₁₆ | 5⅝ | 8¼ | 64.30 | 73.30 |
| 482 | 3 | 3 | 3½ | 9½ | 184.00 | 86.60 |

+ Nominal core weight in pounds is obtained by multiplying the gross volume by the following factors: 12 mil—.262, 4 mil—.248, 2 mil—.246, 1 mil—.229.